ELECTRA

ELECTRA CONSUMER PRODUCTS LTD

HPI TECHNICAL SERVICE MANUAL

Version 1.0

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A.S.T.S

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TECHNICAL AND SERVICE MANUAL

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HPI Series Features

- Single split AC Inverter
- R-22 and R407c models
- Lego concept (R407c only)
- Wide dynamic range
- Energy saving
- Very low noise levels
- Variable speed indoor and outdoor fan motors
- Base heater
- Self contained diagnostics
- Full Electro Magnetic Compliance
- CE, CB Compliance
- Power Factor Correction
- Supports IAQ feature – Ioniser, Electro Static filter, and Fresh Air

Available R-22 Models:

	Nominal Cooling Capacity [kW]		
	2.5	3.2	6
Outdoor Unit Models			
GC-9INV	●		
GC-11INV		●	
Indoor Unit Models			
WNG	●	●	

Available R-407c Models:

	Nominal Cooling Capacity [kW]		
	2.5	3.2	6
Outdoor Unit Models			
ONG3-9INV	●		
ONG3-11INV		●	
GC-18INV			●
Indoor Unit Models			
WNG	●	●	
ECF (K)	●	●	●
PXD	●	●	●
WMN			●

Item			Model	WNG-9INV/GC-9INV	
Function				Cooling	Heating
Capacity			Kal/hr	2150(820-2750)	2580(850-3265)
			Btu/hr	8540(3410-10920)	10240(3410-13000)
			W	2500(1000-3200)	3000(1000-3800)
Total Input			W	870(400-1450)	1100(375-1800)
Running Current			A	4.4	4.4
Power Supply (ph, Hz, voltage)				single , 50HZ , 220V	
INDOOR UNIT	External finish			Texture	
	Heat exchanger			Louver/hydrophilic fin coil	
	Fan (drive)			Crossflow	
	Fan motor output		W	20	
	Airflow (Hi)		m/hr	400	420
	Operation control type			Remote control/ LED	
	Noise level(Hi)		db(A)	37	39
	Condensate drain I.D.		mm(in)	16	
	Dimensions	W	mm(in)	810	
		D	mm(in)	190	
		H	mm(in)	285	
	Weight		Kg(lbs)	10	
	Packing dimensions		mm	990 x 340 x 240	
	Unit stacking		units	8	
OUTDOOR UNIT	Refrigerant control			Capilary tube	
	Compressor type			Rotary/single piston/ inverter	
	Model			KHV104FCTC	
	Starter type			Line start	
	Protection device			Temp/Current	
	Heat exchanger			Louver/hydrophilic fin coil	
	Fan (drive) x No.			Propeller (direct) x 1	
	Motor output		W	30	
	Defrost method			Reverse cycle	
	Noise level		db(A)	54	
	Dimensions	W	mm	830	
		D	mm	240	
		H	mm	545	
	Weight		Kg.(lbs)	34	
	Packing dimensions		mm.	880 x 310 x 610	
	Unit stacking		units	3	
TUBING	Refrigerant			R - 22	
	Charge		gr.(lbs)	850(7.5m)	
	Tube size O.D.	liquid	mm.(in.)	6.35 (1/4)	
		suction	mm.(in.)	9.52 (3/8)	
	Connection method between the indoor and outdoor unit	indoor & outdoor		Flared	
		height difference		Max. 6m	
		tubing length		Max.12m	

Item			Model	WNG-11INV/GC-11INV	
Function				Cooling	Heating
Capacity			Kal/hr	2750(775-3270)	3610(775-4300)
			Btu/hr	10910(3070-12960)	14322(3070-17050)
			W	3200(900-3800)	4200(900-5000)
Total Input			W	1200(400-1700)	1650(400-2250)
Running Current			A	5.5	7
Power Supply (ph, Hz, voltage)				single , 50HZ , 230V	
INDOOR UNIT	Ionizer			YES (optional)	
	Electrostatic Filter			YES (optional)	
	External finish			Texture	
	Heat exchanger			Louver/hydrophilic fin coil	
	Fan (drive)			Crossflow	
	Fan motor output		W	20	
	Airflow (Hi)		m/hr	482	570
	Operation control type			Remote control/ LED	
	Noise level(Lo-M-Hi)		db(A)	30.7-35.5-39	31.8-36-40.5
	Condensate drain I.D.		mm(in)	16	
	Dimensions	W	mm(in)	810	
		D	mm(in)	190	
		H	mm(in)	285	
	Weight		Kg(lbs)	10.5	
	Packing dimensions		mm	990 x 340 x 240	
	Unit stacking		units	8	
OUTDOOR UNIT	Refrigerant control			Capilary tube	
	Compressor type			Rotary/single piston/ inverter	
	Model			SHV130FGEC	
	Starter type			Line start	
	Protection device			Temp/Current	
	Heat exchanger			Louver/hydrophilic fin coil	
	Fan (drive) x No.			Propeller (direct) x 1	
	Motor output		W	32	
	Defrost method			Reverse cycle	
	Noise level		db(A)	57	
	Dimensions	W	mm	830	
		D	mm	240	
		H	mm	545	
	Weight		Kg.(lbs)	34	
	Packing dimensions		mm.	880 x 310 x 610	
	Unit stacking		units	3	
TUBING	Refrigerant			R - 22	
	Charge		gr.(lbs)	(6m)990	
	Tube size	liquid	mm.(in.)	6.35 (1/4)	
	O.D.	suction	mm.(in.)	12.7 (1/2)	
	Connection method between the indoor and outdoor unit	indoor & outdoor		Flared	
		height difference		Max. 6m	
		tubing length		Max.12m	
		Additional Charge		6 m<Lin<8m:+5g/m Lin>8m:+9g/m	

Preliminary technical data of new HPI product under development

		WNG/ONG3-9INV(R407C)	WNG/ONG3-11INV(R407C)
Cooling Capacity	kW	2.50 (1.2-3.1)	3.2 (1270-4025)
Cooling COP	W/W	2.7	2.75
Heating Capacity	KW	2.8 (1.3-3.65)	3.95 (1.2-4.55)
Heating COP	W/W	2.7	2.8
Max Indoor Noise Level (1)	dB (A)	36	40
Min Indoor Noise Level (1)	dB (A)	29	31
Max Outdoor Noise (1)	dB (A)	49	49
Min Outdoor Noise (1)	dB (A)	45	45
Indoor Unit Dimensions	mm	810x285x190	
Outdoor unit dimensions	mm	290x795x690	
Connecting Tube Size (flare type)	mm	6.35--liquid	6.35--liquid
		9.53--gas	12.7--gas
Max Connecting Tube Length	m	12	12

2. K/ONG3 -9INV, 11INV R407C

		K9/ONG3-9INV(R407C)	K/ONG3-11INV(R407C)
Cooling Capacity	kW	2.50 (1.2-3.1)	3.2 (1270-4025)
Cooling COP	W/W	2.8	2.8
Heating Capacity	KW	2.8 (1.3-3.65)	3.95 (1.2-4.55)
Heating COP	W/W	2.8	2.8
Max Indoor Noise Level (1)	dB (A)	38	38
Min Indoor Noise Level (1)	dB (A)	31	31
Max Outdoor Noise (1)	dB (A)	49	49
Min Outdoor Noise (1)	dB (A)	45	45
Indoor Unit Dimensions	mm	820x630x190	
Outdoor unit dimensions	mm	290x795x690	
Connecting Tube Size (flare type)	mm	6.35--liquid	6.35--liquid
		9.53--gas	12.7--gas
Max Connecting Tube Length	m	15	15

3.PXD/ONG3 9INV,11INV R407C

		PXD/ONG3-9INV(R407C)	PXD/ONG3-11INV(R407C)
Cooling Capacity	kW	2.54 (1.2-3.1)	3.23 (1270-4025)
Cooling COP	W/W	2.8	2.8
Heating Capacity	KW	2.75 (1.3-3.65)	3.5 (1.2-4.55)
Heating COP	W/W	2.8	2.8
Max Indoor Noise Level (1)	dB (A)	38	42
Min Indoor Noise Level (1)	dB (A)	33	36
Max Outdoor Noise (1)	dB (A)	49	49
Min Outdoor Noise (1)	dB (A)	45	45
Indoor Unit Dimensions	mm	820x630x190	
Outdoor unit dimensions	mm	290x795x690	
Connecting Tube Size	mm	6.35--liquid	6.35--liquid
(flare type)		9.53--gas	12.7--gas
Max Connecting Tube Length	m	15	15

4. PXD18/K18/WMN18-GC18RC INV R407C

		WMN2/GC-18INV(R407C)
Cooling Capacity	kW	5.2(2.0-6.5)
Cooling COP	W/W	2.8
Heating Capacity	kW	5.6(2.3-6.8)
Heating COP	W/W	2.9
Max Indoor Noise Level (1)	dB (A)	48
Min Indoor Noise Level (1)	dB (A)	41
Max Outdoor Noise (1)	dB (A)	58
Min Outdoor Noise (1)	dB (A)	53
Outdoor unit dimension	mm	302x846x690
Indoor unit dimension	mm	1115x330x220
Connecting Tube Size (flare type)	mm	9.53--liquid
		15.88--gas
Max Connecting Tube Length	m	15

		K18/GC18RC INV(R407C)
Cooling Capacity	kW	5.2 (2.0-6.5)
Cooling COP	W/W	2.8
Heating Capacity	KW	5.6(2.3-6.8)
Heating COP	W/W	2.9
Max Indoor Noise Level (1)	dB (A)	48
Min Indoor Noise Level (1)	dB (A)	41
Max Outdoor Noise (1)	dB (A)	58
Min Outdoor Noise (1)	dB (A)	53
Outdoor unit Dimensions		302x846x690
Indoor Unit Dimensions	mm	625*625*327
Connecting Tube Size (flare type)	mm	9.53--liquid
		15.88--gas
Max Connecting Tube Length	m	15

		PXD18/GC18RC INV(R407C)
Cooling Capacity	kW	5.2 (2.0-6.0)
Cooling COP	W/W	2.6
Heating Capacity	KW	5.6 (2.2-6.3)
Heating COP	W/W	2.7
Max Indoor Noise Level (1)	dB (A)	36
Min Indoor Noise Level (1)	dB (A)	29
Max Outdoor Noise (1)	dB (A)	49
Min Outdoor Noise (1)	dB (A)	45
Outdoor unit Dimensions	mm	302x846x690
Indoor Unit Dimensions	mm	820x630x190
Connecting Tube Size (flare type)	mm	9.53--liquid
		15.88--gas
Max Connecting Tube Length	m	15

OPERATING RANGE

NOTES:

1. Rating conditions ISO DIS 5151

Cooling: Indoor: 27°C (80°F) DB 19.5°C (67°F) WB
Outdoor: 35°C (95°F) DB

Heating: Indoor : 20°C (70°F) DB
Outdoor: 7°C (45°F) DB 6°C (43°F) WB

2. Guaranteed operating range:

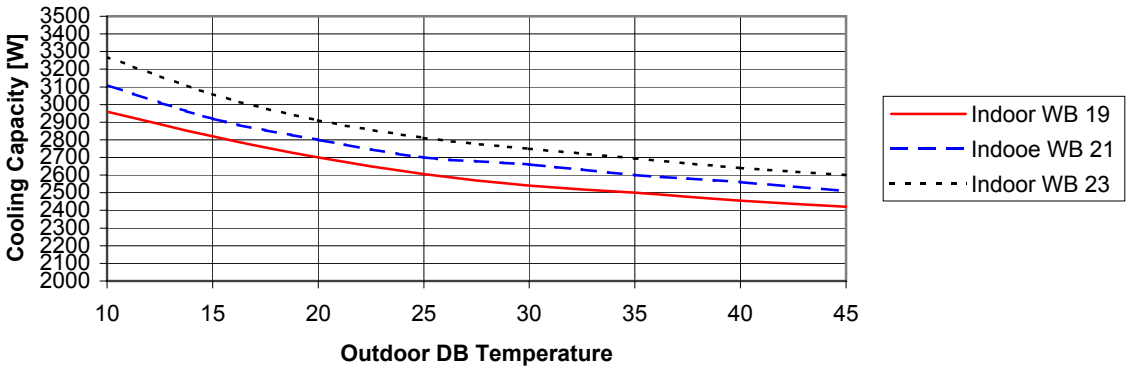
		Indoor	Outdoor
Cooling	Upper limit	32°C DB, 23°C WB	46°C DB
	Lower limit	21°C DB, 15°C WB	10°C DB
Heating	Upper limit	27°CD	21°C DB, 15.5°C WB
	Lower limit	20°C DB	-14°C DB, -15°C WB
Voltage		198 - 254v	

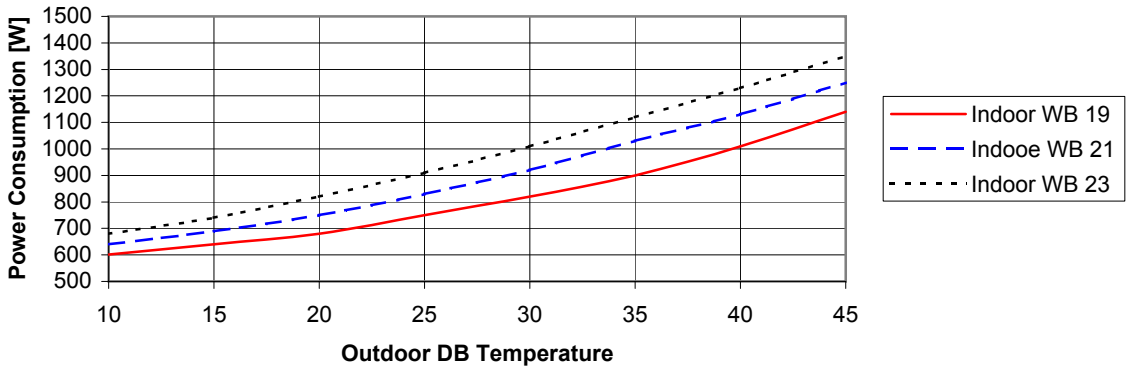
3. Above data based on indicated voltage

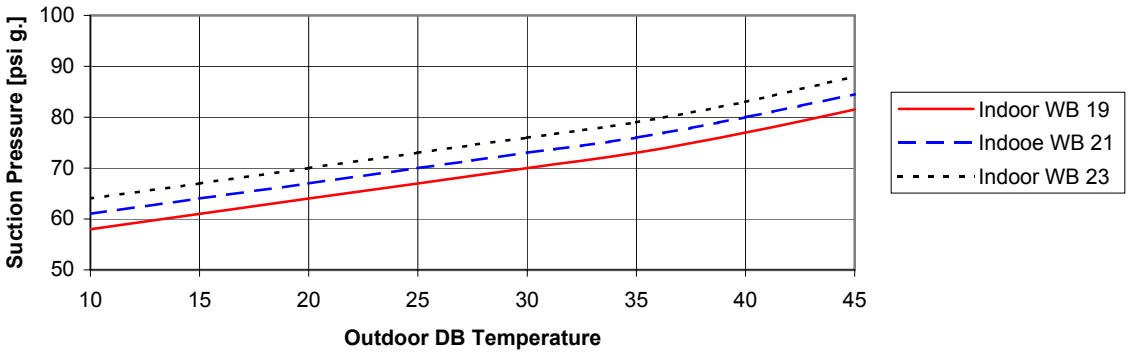
Indoor : 1φ,230v, 50Hz

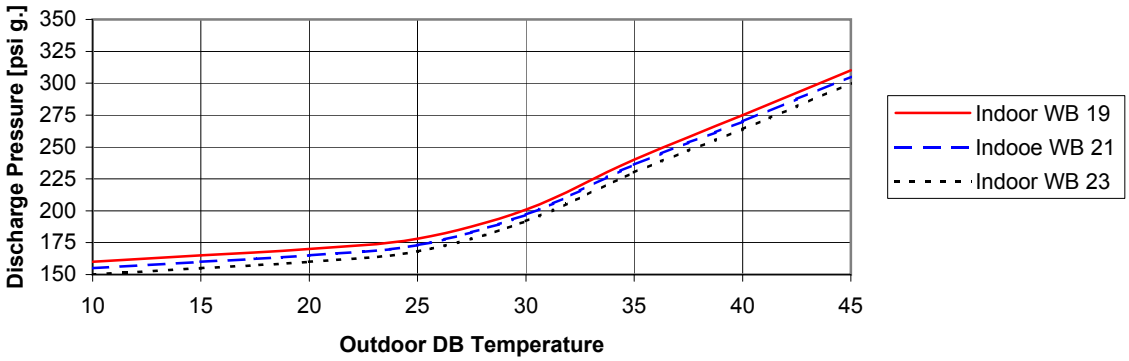
Outdoor: 1φ, 230v, 50Hz.

WNG-9 INV R-22 Cooling Performance



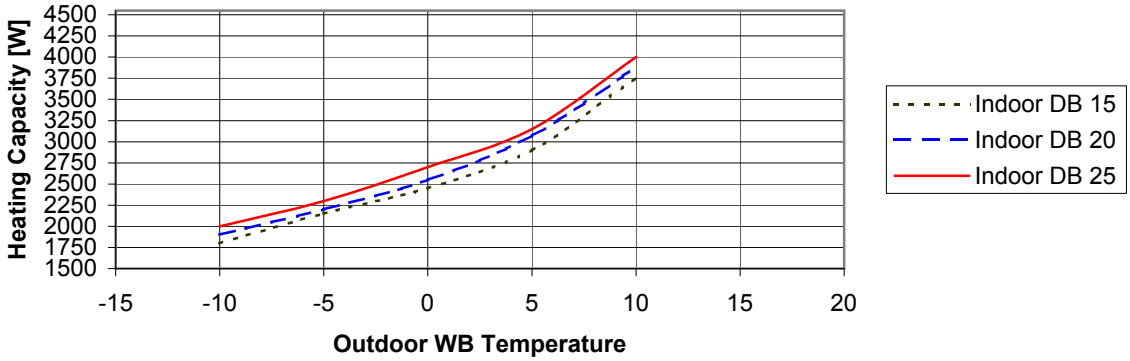


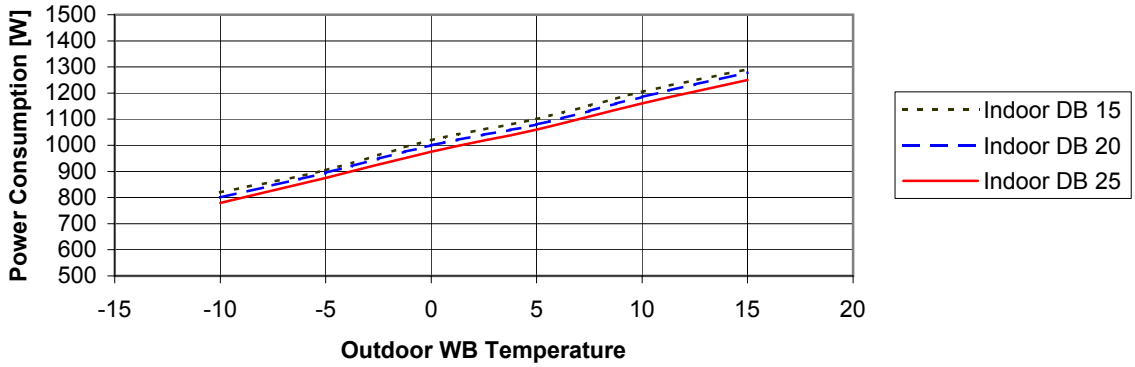


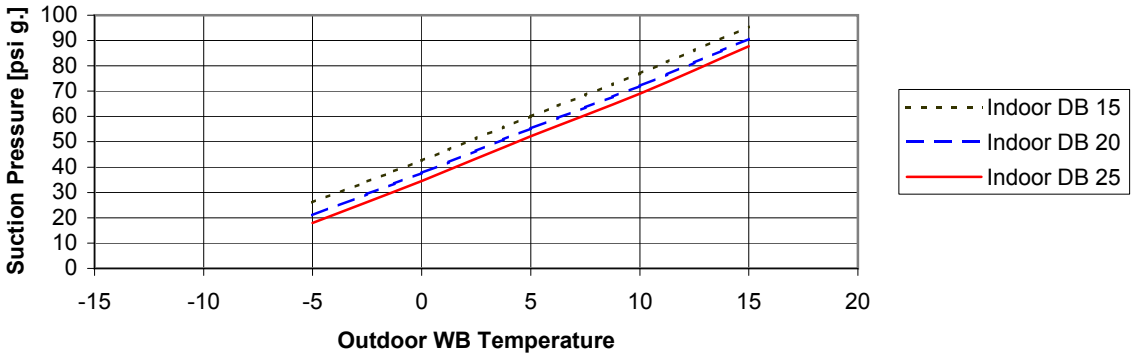


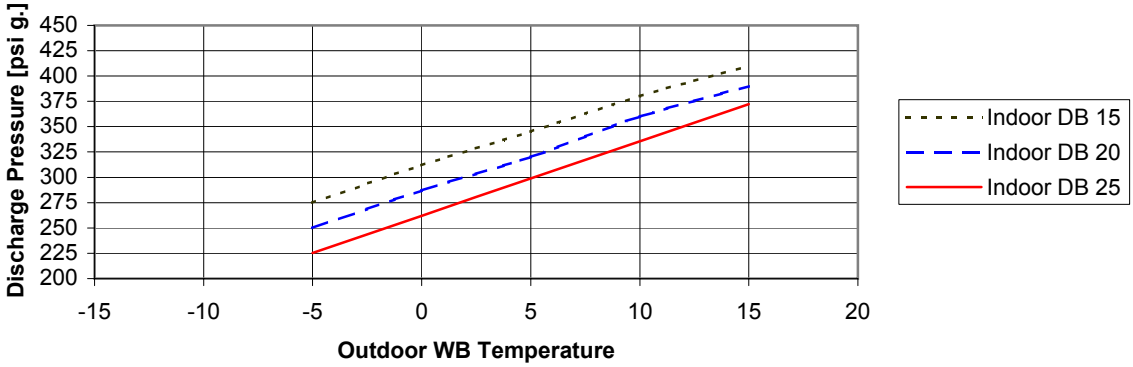
Notes: 1. All temperatures are in Celsius Degrees.
2. All data are for nominal compressor frequency, and high indoor fan speed.

WNG-9 INV R-22 Heating Performance



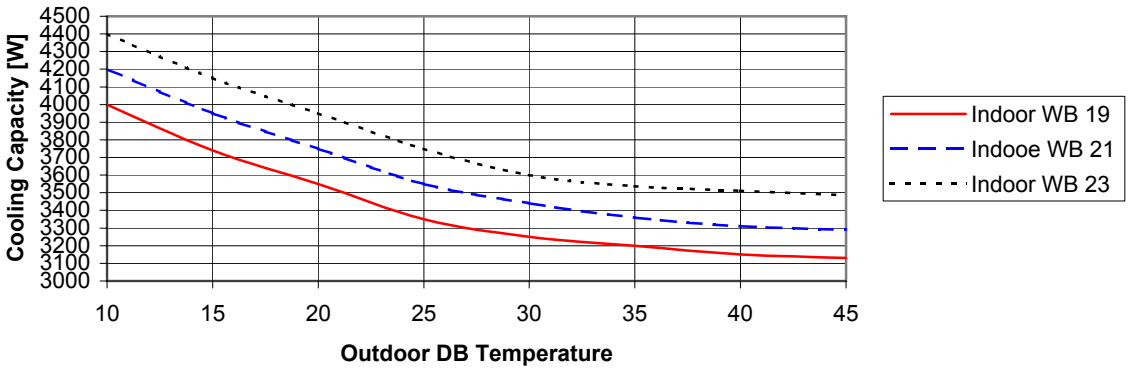


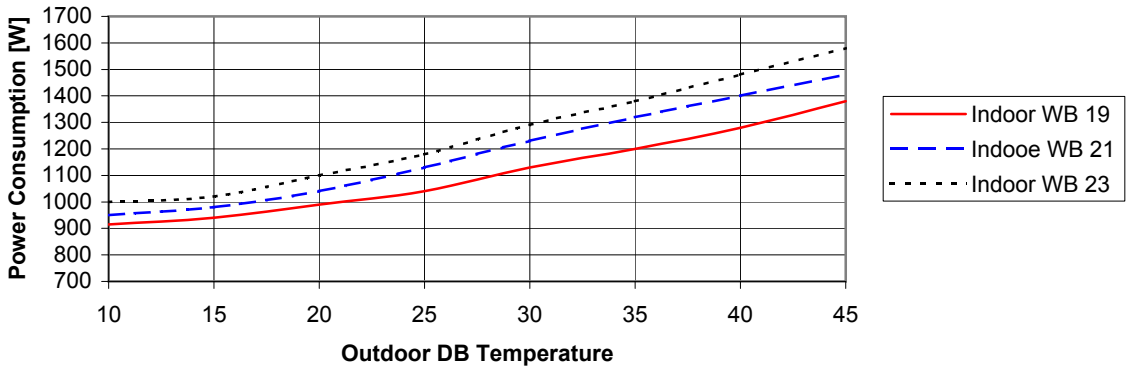


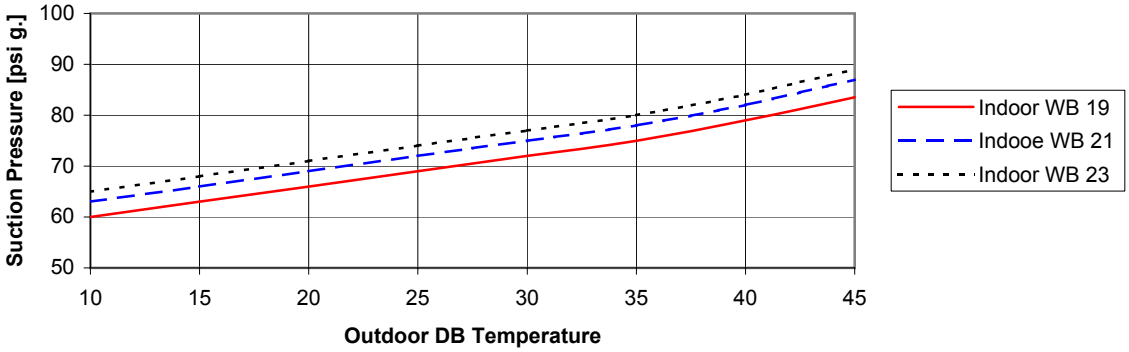


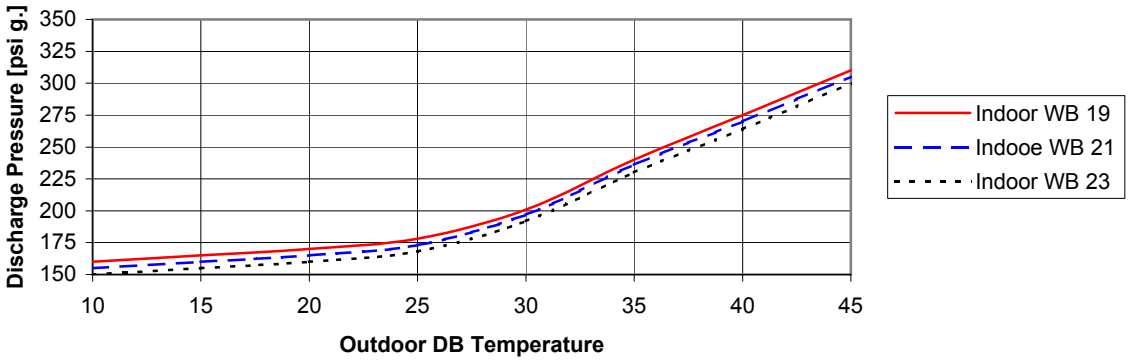
Notes: 1. All temperatures are in Celsius Degrees.
2. All data are for nominal compressor frequency, and high indoor fan speed.

WNG-11 INV R-22 Cooling Performance



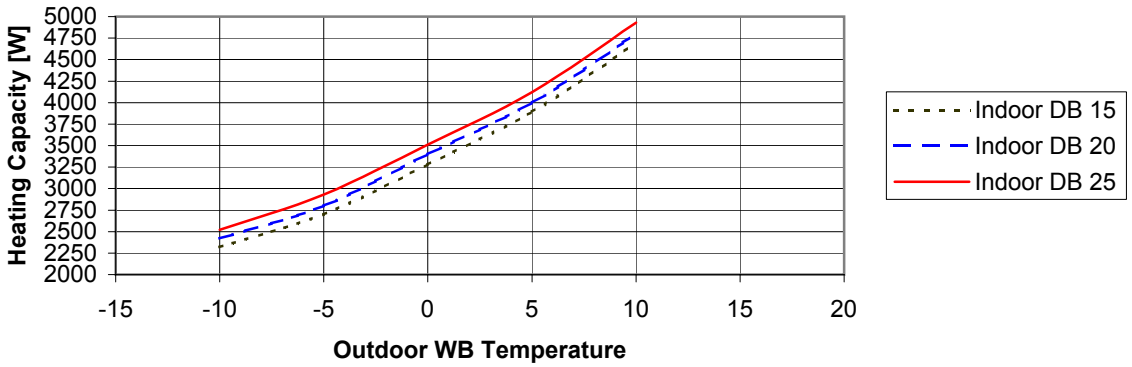


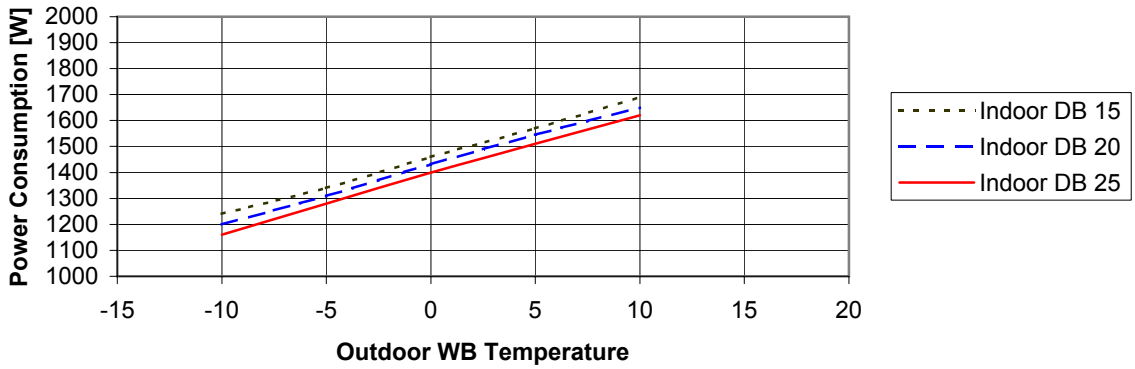


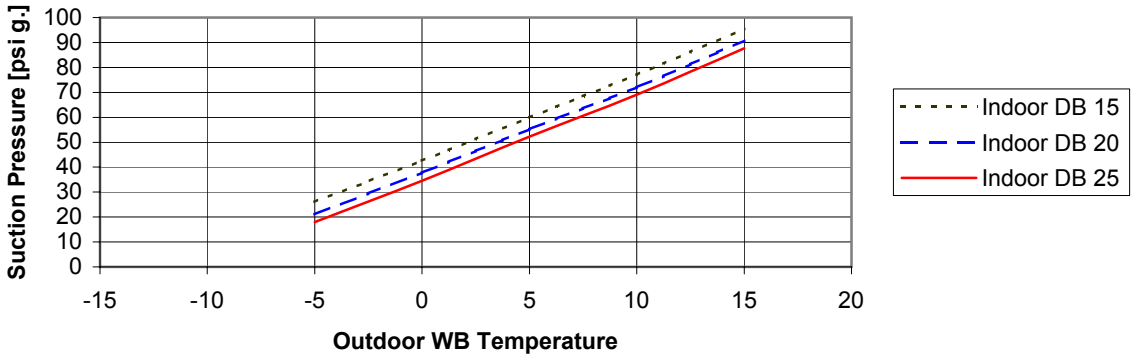


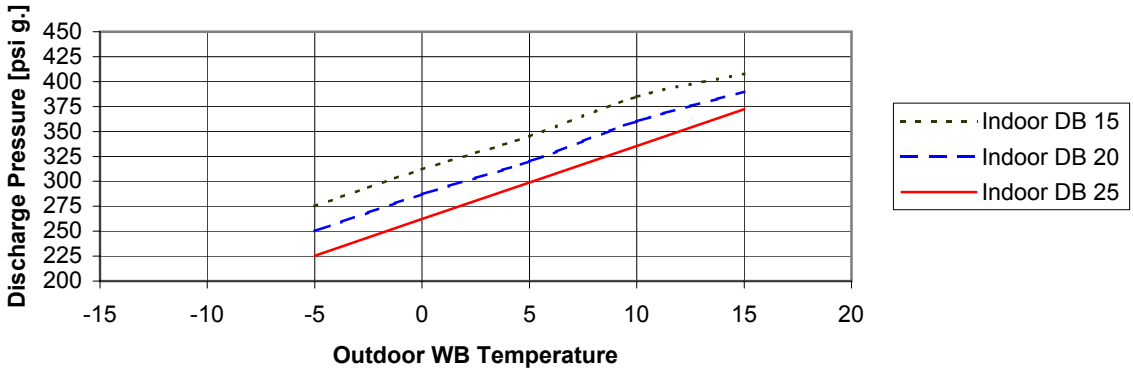
Notes: 1. All temperatures are in Celsius Degrees.
2. All data are for nominal compressor frequency, and high indoor fan speed.

WNG-11 INV R-22 Heating Performance





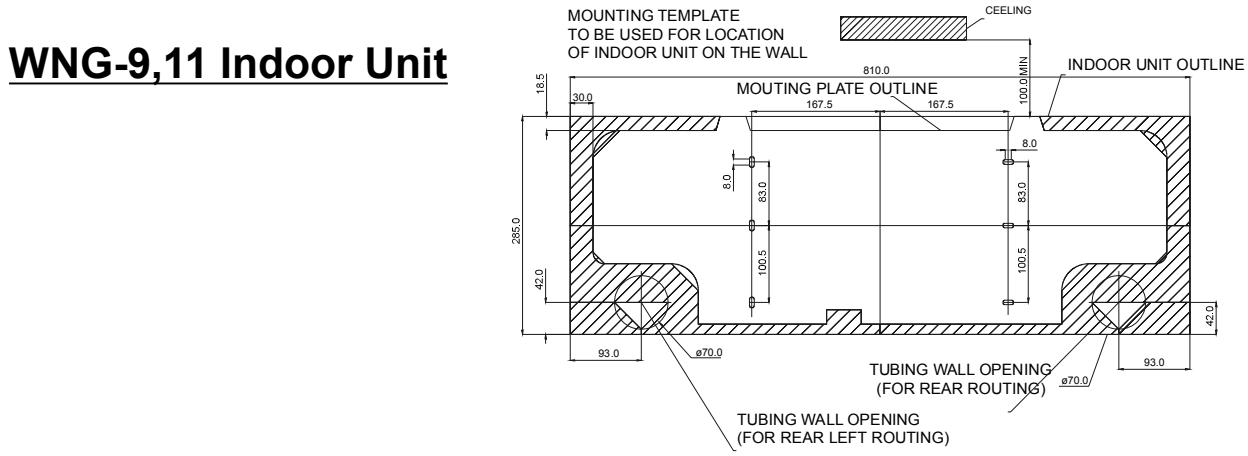


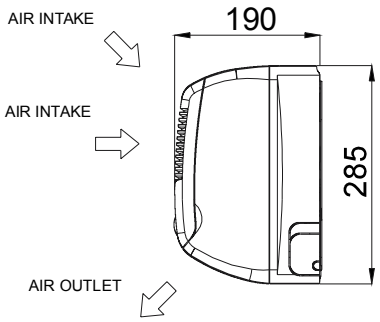


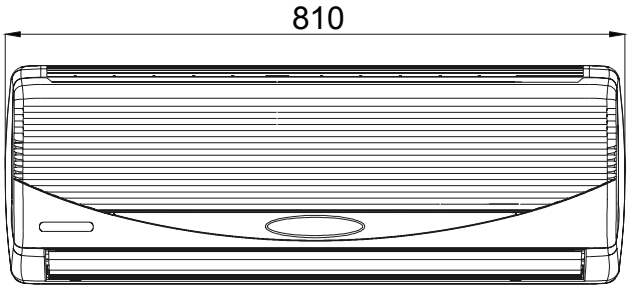
Notes: 1. All temperatures are in Celsius Degrees.
2. All data are for nominal compressor frequency, and high indoor fan speed.

Outline dimensions

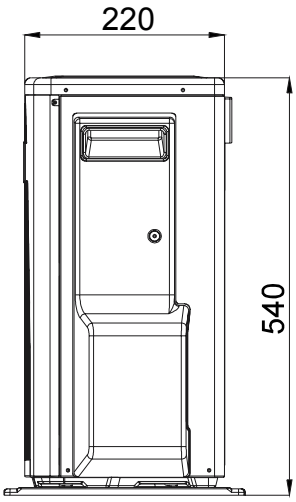
WNG-9,11 Indoor Unit

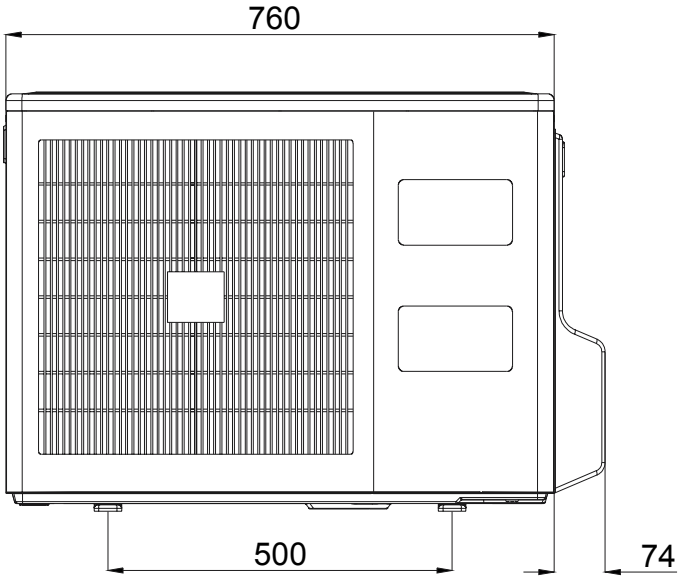


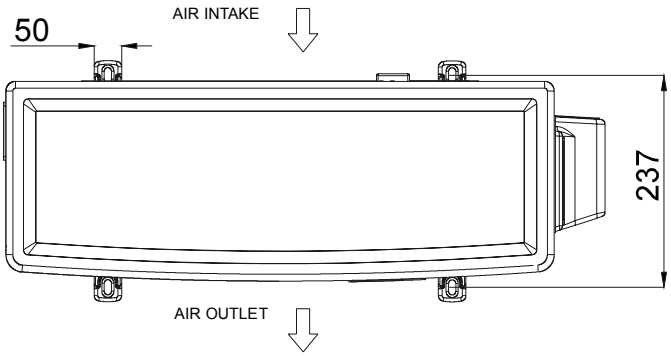




GC-9,11 Outdoor Unit

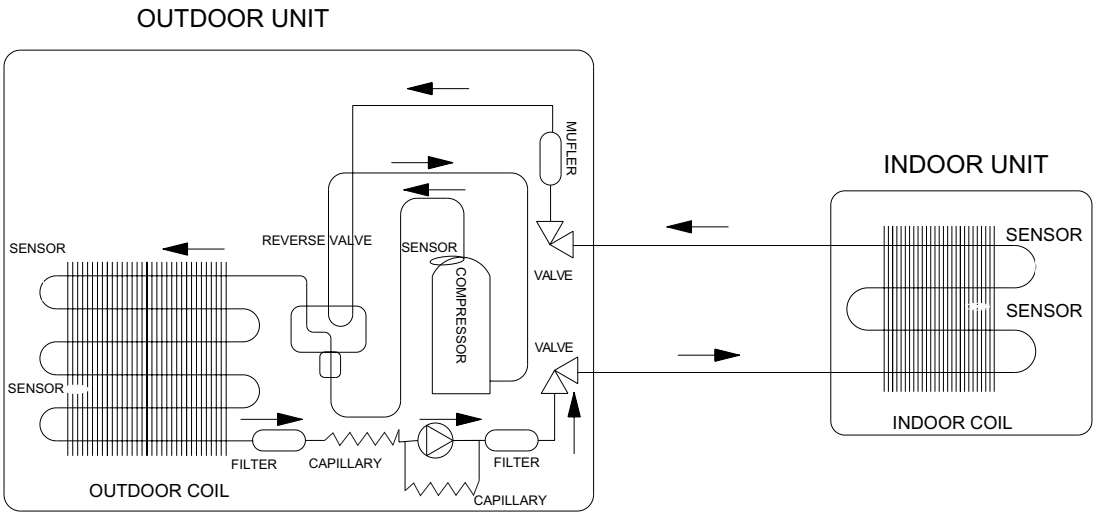




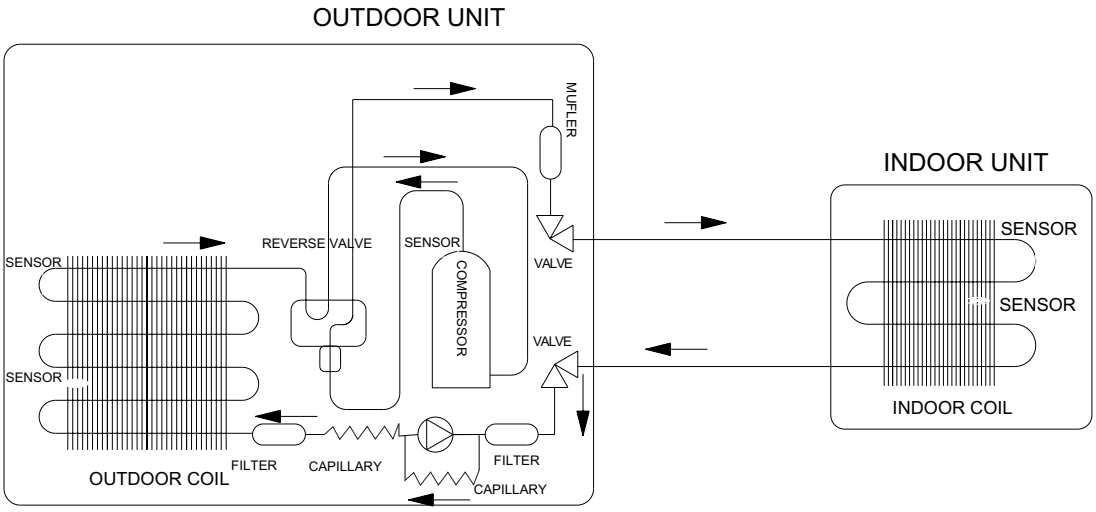


SYSTEM DIAGRAM

WNG-9INVBLJ/GC-9INV WNG-11INVBLJ/GC-11INV



COOLING MODEL

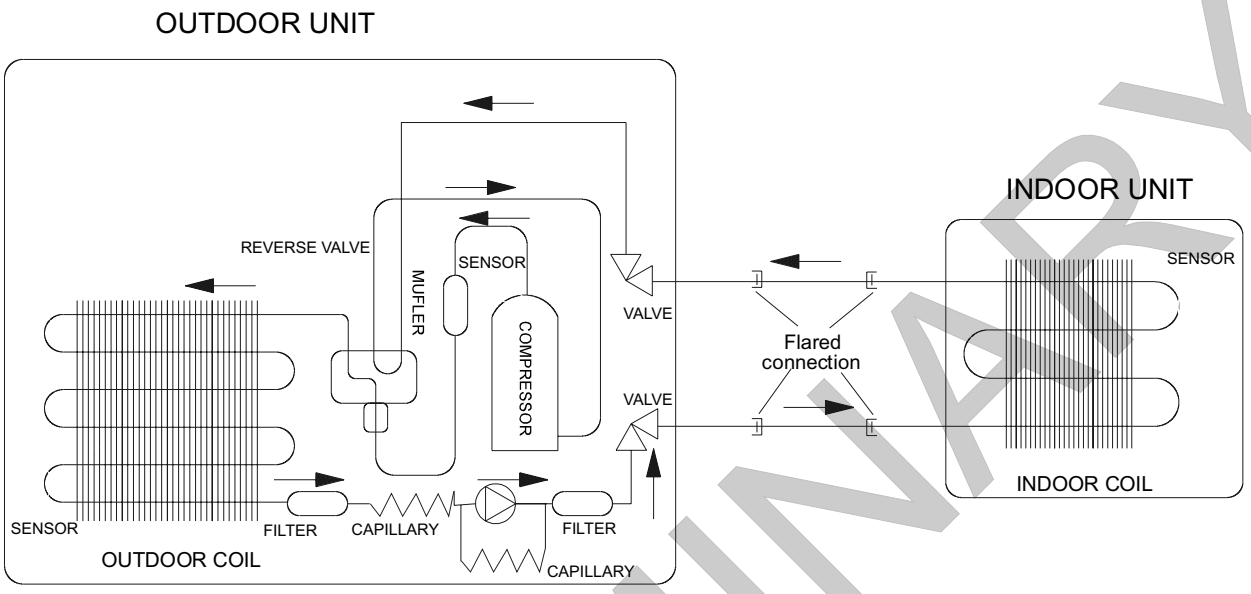


HEATING MODEL

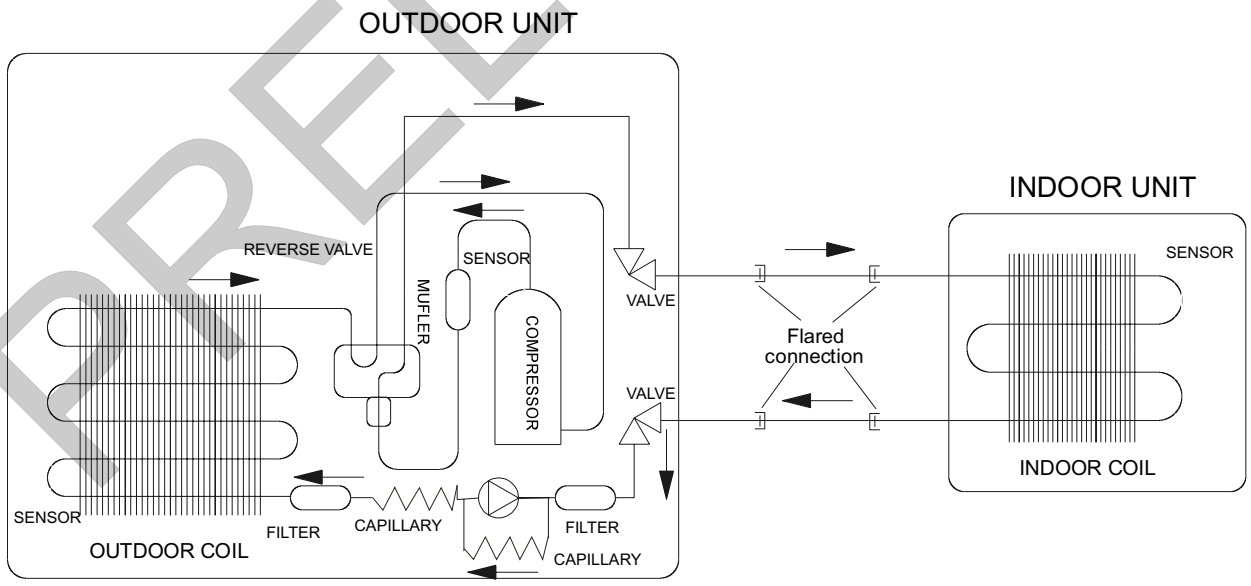
System sketch may differ a little for different unit model.

SYSTEM DIAGRAM

WNG-9,11INVBLJ/ONG3-9,11INV R407C



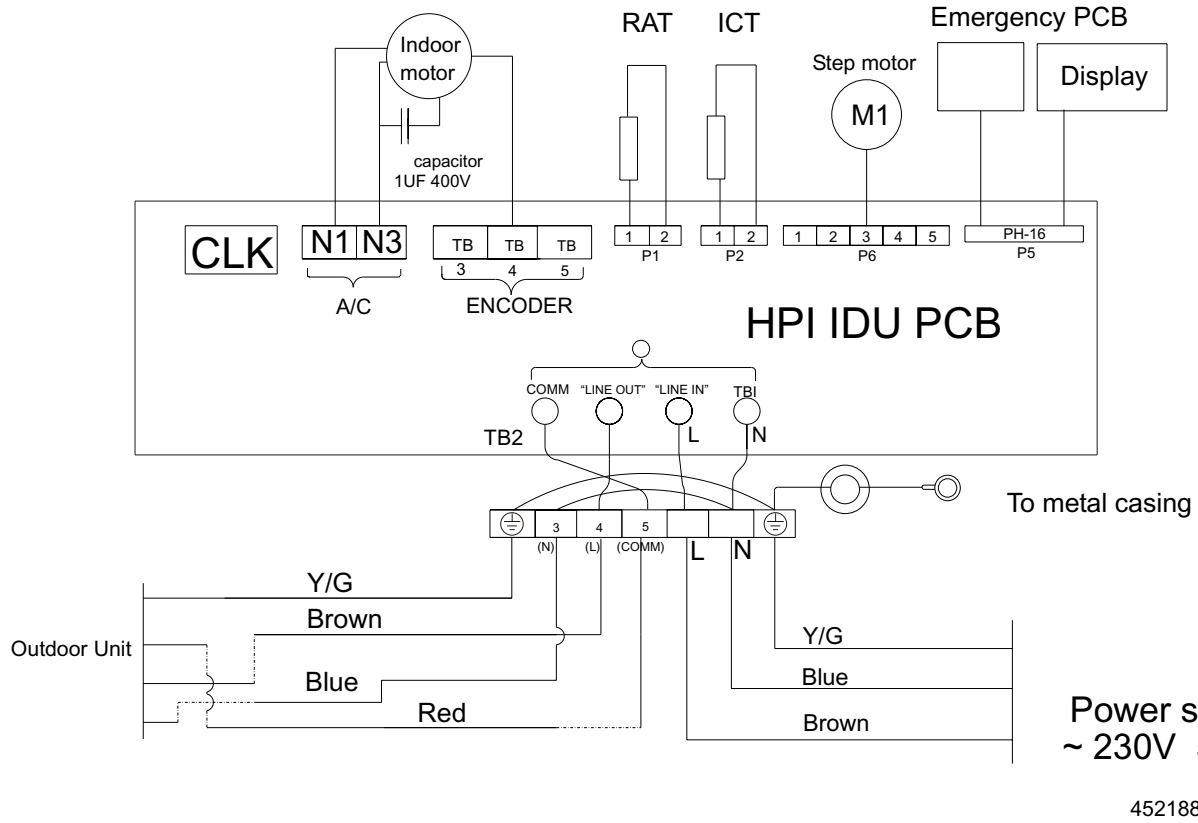
COOLING MODEL



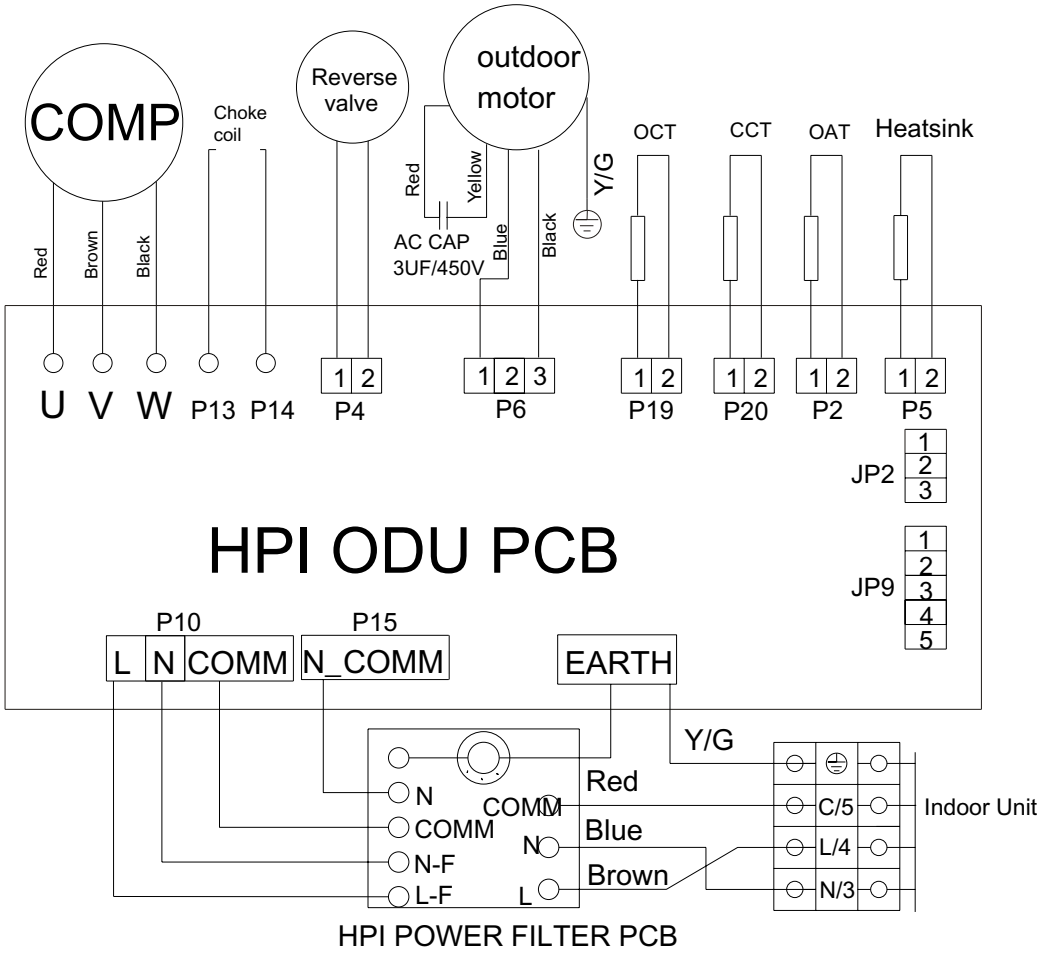
HEATING MODEL

PRELIMINARY

INDOOR UNIT CIRCUIT DIAGRAM
WNG-9,11 R-22



OUTDOOR UNIT CIRCUIT DIAGRAM
GC-9,11INV R-22



1 General Functions and Operating Rules

The HPI SW is parametric.
All parameters are shown in Blue color and with Italic style [*parameter*].
The parameters values are given in the last section of this control logic chapter of the service manual.

1.1 System Operation Concept

The control function is divided between indoor and outdoor unit controllers. Indoor unit is the system 'Master', requesting the outdoor unit for cooling/heating capacity supply. The outdoor unit is the system 'Slave' and it must supply the required capacity unless it enters into a protection mode avoiding it from supplying the requested capacity.
The capacity request is transferred via indoor to outdoor communication, and is represented by a parameter called 'NLOAD'. NLOAD is an integer number with values between 0 and 127, and it represents the heat or cool load felt by the indoor unit. The calculation of NLOAD is done by indoor unit controller and is a function of the difference between user set point and room temperatures. The NLOAD is calculated based on a PI control scheme.

1.2 Compressor Frequency Control

1.2.1 Target Frequency Setting

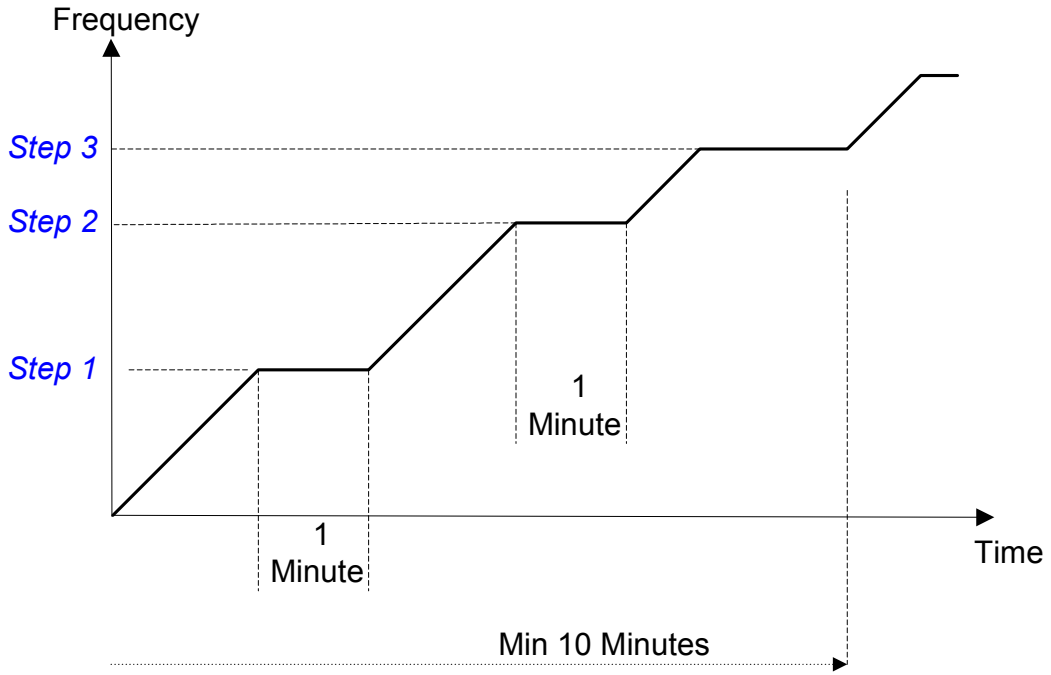
NLOAD	Target Frequency
127	*Maximum frequency*
10 < NLOAD < 127	Interpolated value between minimum and maximum frequency
10	*Minimum frequency*
0	Compressor is stopped

When user chooses to operate in fixed indoor fan speed (high, medium or low), the compressor frequency is limited between the minimum frequency and the *nominal frequency*.
When user selects to operate in AutoFan speed, the full frequency range is used.

1.2.2 Frequency Changes Control

Frequency change rate is 1 Hz/sec.

1.2.3 Compressor Starting Control



1.2.4 Minimum On and Off Time

3 minutes.

1.3 Indoor Fan Control

10 Indoor fan speeds are determined for each model. 5 speeds for cool/dry/fan modes and 5 speeds for heat mode.
When user sets the indoor fan speed to a fixed speed (Low/ Medium/ High), unit will operate constantly at set speed. When AutoFan is selected, indoor unit controller can operate in all speeds. The actual speed is set according to the cool/heat load.

1.4 Outdoor Fan Control

6 outdoor fan speeds are determined for each model. 3 speeds for cool/dry/fan modes, and 3 speeds for heat mode.
Outdoor fan speed is a function of compressor frequency and outdoor air temperature (OAT).

Compressor Frequency (CF)	OAT is disconnected	OAT is connected	
		OAT < 20 at cooling	OAT > 15 at heating
0	OFF		
CF < Minimum + 30	Low		
Other	High	Low	
Maximum	Max	High	

1.5 Reversing Valve (RV) Control

Reversing valve is on in heat mode.
Switching of RV state is done only after compressor is off for over 3 minutes.

1.6 Outdoor Unit Power Supply Relay Control

Outdoor unit power control relay is turned to on when unit is turned on by user, and is turned to off 3 minutes after unit is turned to off by user.

1.7 Ioniser Control

Ioniser is on when unit is on AND indoor fan is on AND Ioniser power switch (on Ioniser) is on.

1.8 Electro Static Filter (ESF) Control

ESF is on when unit is on AND indoor fan is on.

1.9 Base Heater Control

When OAT is connected, Base Heater will be on when unit is in heating and OAT<2^0C.
When OAT is disconnected, Base Heater will be on when unit is in heating.

2 Fan Mode

In high/ medium/ low indoor fan user setting, unit will operate fan in selected speed.
In AutoFan user setting, fan speed will be adjusted automatically according to the difference between actual room temperature and user set point temperature.

3 Cool Mode

NLOAD is calculated according to the difference between actual room temperature and user set point temperature by PI control.
In high/ medium/ low indoor fan user setting, unit will operate fan in selected speed.
In AutoFan user setting, fan speed will be adjusted automatically according to the calculated NLOAD.

4 Heat Mode

NLOAD is calculated according to the difference between actual room temperature and user set point temperature by PI control.
In high/ medium/ low indoor fan user setting, unit will operate fan in selected speed.
In AutoFan user setting, fan speed will be adjusted automatically according to the calculated NLOAD.

4.1 Temperature Compensation

3 to 5 degrees are reduced from room temperature reading (except when in I-Feel mode), to compensate for temperature difference between high and low areas in the heated room, and for coil heat radiation on room thermistor.

4.2 Hot Keep Function

When starting the unit in heat mode, indoor fan remains off until indoor coil temperature is over 35 degrees.
When compressor is stopped, indoor fan speed is reduced to very low speed.

5 Auto Cool/Heat Mode

When in auto cool heat mode unit will automatically select between cool and heat mode according to the difference between actual room temperature and user set point temperature (ΔT).
Unit will switch from cool to heat when compressor is off for 3 minutes, and ΔT < -3.
Unit will switch from heat to cool when compressor is off for 5 minutes, and ΔT < -3.

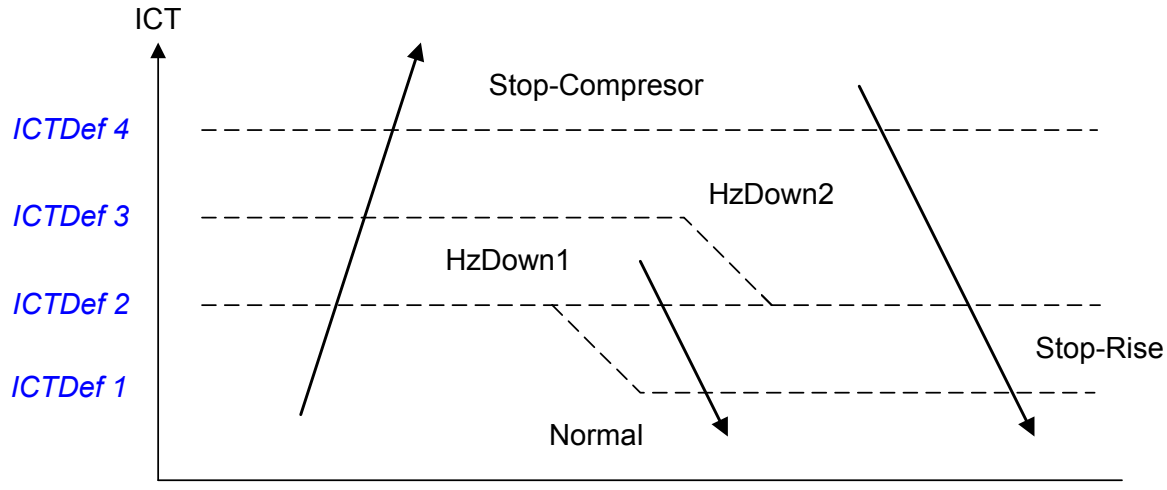
6 Dry Mode

Unit will operated in cool while controlling indoor fan speed to optimize value between very low and medium speeds.

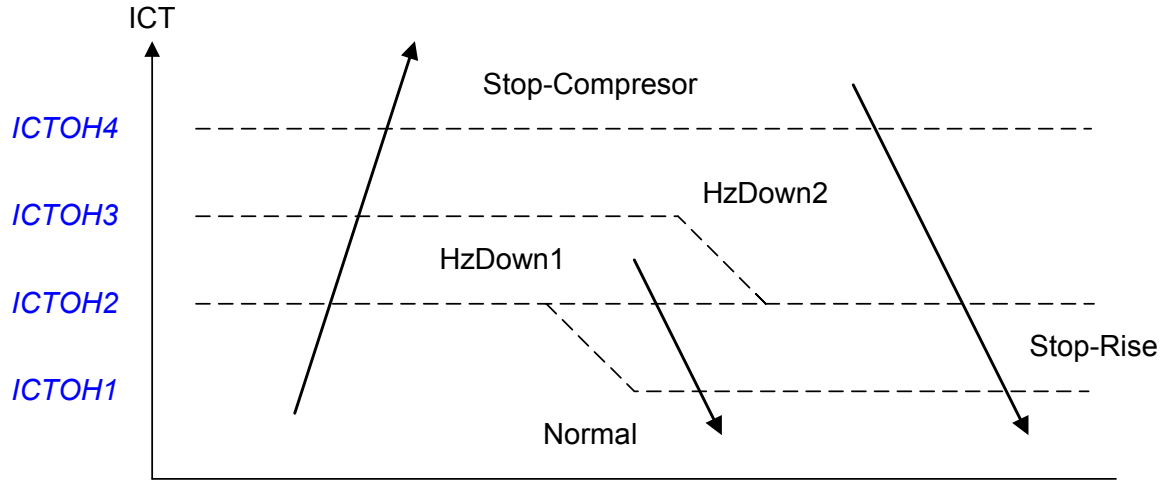
7 Protections

There are 5 protection codes.
Normal – unit operate normally.
Stop Rise – compressor frequency can not be raised but does not have to be decreased.
HzDown1 – Compressor frequency is reduced by 2 to 5 Hz per minute.
HzDown2 – Compressor frequency is reduced by 5 to 10 Hz per minute.
Stop Compressor – Compressor is stopped.

7.1 Indoor Coil Defrost Protection

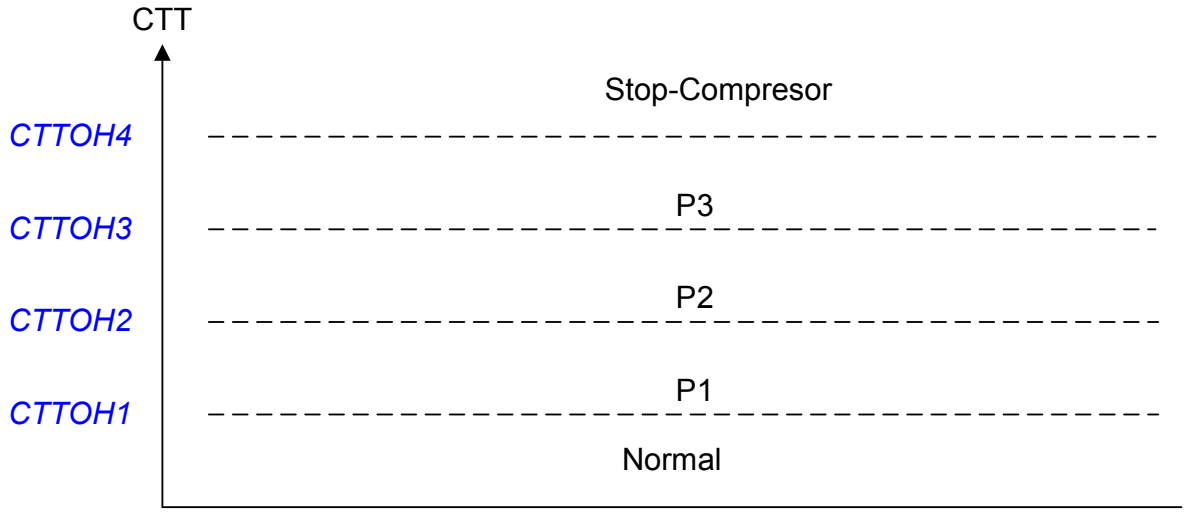


7.2 Indoor Coil over Heating Protection



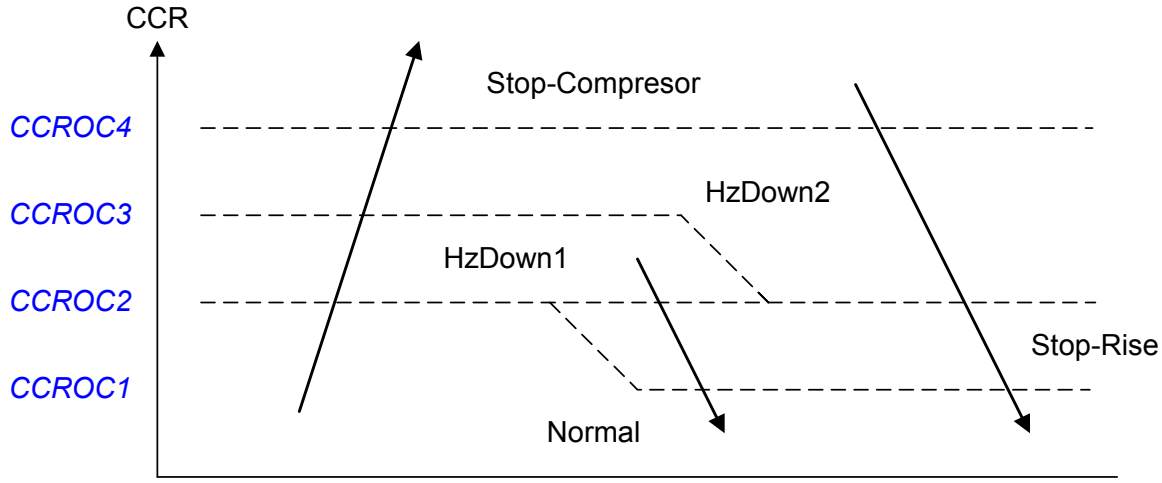
7.3 Compressor over Heating Protection

Compressor temperature can be in one of 5 control zones (4 in protection, and 1 normal), according to the following chart.



Control Status	Compressor Temperature Increases	Else
P1	Normal	Stop Rise
P2	HzDown 1	Stop Rise
P3	HzDown 2	HzDown 1
Stop Compressor	Stop Compressor	

7.4 Compressor over Current Protection



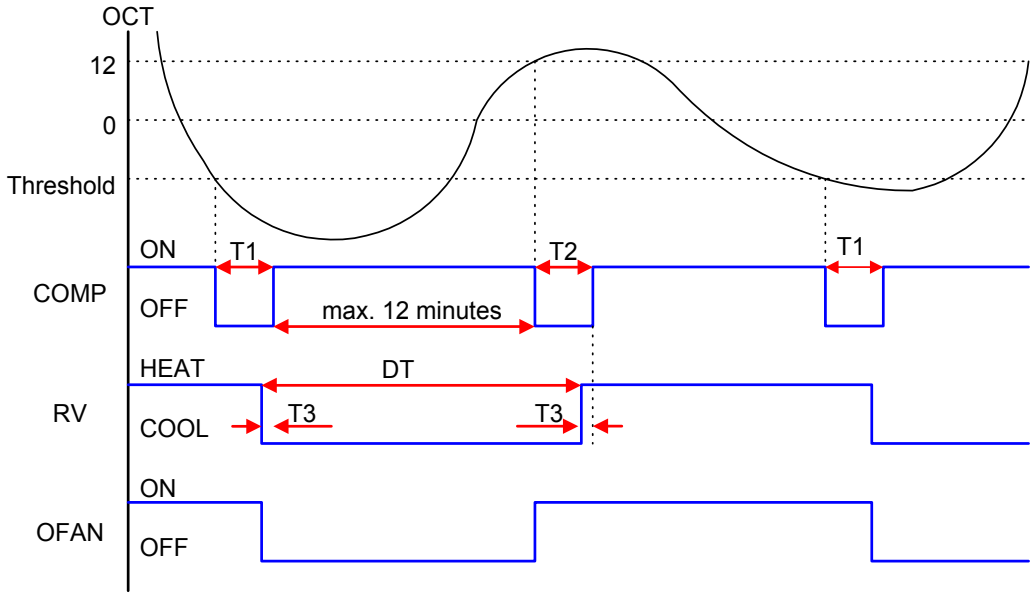
7.5 Outdoor Coil Deicing Protection

7.5.1 Deicing Starting Conditions

Deicing operation will start when either one of the following conditions exist:
Condition 1 (Dynamic Deicing): Unit identify temperature drop of 3 degrees compare to steady state values taken 10 minutes after last compressor frequency increasing.
Condition 2 (Static Deicing): Outdoor coil temperature drops below -8 degrees, and compressor on time is over deicing interval time.

Deicing interval time when compressor is first started in heat mode, is 10 minutes if OCT < -2, and is 40 minutes in other cases.
Deicing interval time is changed (increased/ decreased in 10 minutes steps) as a function of deicing time. If deicing time is shorter then former deicing time, the deicing interval time will be increased. If deicing time is longer then former deicing time, the deicing interval time will be decreased.

7.5.2 Deicing Protection Procedure



T1 = 36 seconds, T2 = 36 seconds, T3 = 6 seconds

8 Clock

0 = Clock Switch Open
1 = Clock Switch close

The Clock is activate according to the following table:

A/C STATE (before clock is changed)	CLOCK STATE (before clock is changed)	CLOCK ACTION (clock is changed)	A/C NEW STATE (after clock is changed)
ON	1	0	OFF
OFF	0	1	ON
OFF by interrupt (1)	1	0	OFF
ON by interrupt (1)	0	1	ON

9 On Unit Controls and Indicators

9.1 Indoor Unit Controller Controls and Indicators

STAND BY INDICATOR	1. Lights up when the Air Conditioner is connected to power and ready to receive the R/C commands
OPERATION INDICATOR	1. Lights up during operation. 2. Blinks for 300 msec., to announce that a R/C infrared signal has been received and stored. 3. Blinks continuously during protections (according to the relevant spec section).
TIMER INDICATOR	Lights up during Timer and Sleep operation.
FILTER INDICATOR	Lights up when Air Filter needs to be cleaned.
COOLING INDICATOR	Lights up when system is switched to Cool Mode by using the Mode Switch on the unit.
HEATING INDICATOR	Lights up when system is switched Heat Mode by using the Mode Switch on the unit.
Mode SWITCH (COOL/HEAT/OFF)	Every short pressing , the next operation mode is selected, in this order : SB → Cool Mode → Heat Mode → SB → … In long pressing system enters diagnostic mode.
RESET / FILTER SWITCH	For short pressing: When Filter LED is on - turn off the FILTER INDICATOR after a clean filter has been reinstalled. When Filter LED is off – enable/disable the buzzer announcer, if selected.

Note: pressing time is defined as the time between press and release.
If pressing time is one second or less – press is consided as short pressing.

9.2 Outdoor Unit Controller Indicators

Unit has three LED's.
SB LED is ON when power is ON (230 VAC, even when no communication).
STATUS LED is ON when COMP is ON, and Blinks according to diagnostics mode definitions when either fault or protection occurs.
FAULT LED Blinks according to diagnostics mode definitions when either fault or protection occurs.

10 Jumper Settings

10.1 Indoor Unit Controller

0 = Open Jumper (disconnect jumper).
1 = Close Jumper (connect jumper).

Self test Jumper – J1

OPERATION	J1
SELF-TEST	1
NORMAL	0

Model	Jumper Settings				
	J3	J4	J5	J6	J7
WNG-9 INV (R-22)	1	1	0	1	0
WNG-11 INV (R-22)	1	1	0	0	1
WNG-9 INV	1	1	0	1	0
WNG-11 INV	1	1	0	0	1
WMN-18 INV	1	0	1	1	1
PXD–9 INV	0	0	1	1	0
PXD-11INV	0	0	1	0	1
PXD-18INV	0	0	1	1	1
K–9 INV	1	1	1	1	0
K-11INV	1	1	1	0	1
K-18INV	1	1	1	1	1

When J8 is shorted (=1), IDU will use parameters from EEPROM. If EEPROM is invalid, IDU will ignore J8 and use/copy the ROM pointed by the selected jumpers (will also set an according fault).

10.2 Outdoor Unit Controller

1. JP9 JUMPER LAYOUT

EEV0 *(PIN 9)*	**EEV1** *(PIN 7)*	**COMP0** *(PIN 5)*	**COMP1** *(PIN 3)*	**COMP2** *(PIN 1)*
GND *(PIN 10)*	**GND** *(PIN 8)*	**GND** *(PIN 6)*	**GND** *(PIN 4)*	**GND** *(PIN 2)*

2. COMPRESSOR MODEL SELECTION

COMP0	COMP1	COMP2	Unit Model
OFF	OFF	OFF	EEPROM parameter
OFF	ON	OFF	GC-9INV R-22
ON	OFF	OFF	GC-11INV R-22
OFF	OFF	ON	ONG3-9INV R-407c
ON	ON	OFF	ONG3-11INV R-407c
ON	OFF	ON	GC-18INV R-407c

11 Self Test

11.1 Indoor Unit Controller Self Test

To initiate self test, the following steps should be taken:

1. Disconnect All AC power to IDU.
2. Insert Test Jumper on Jumper 9.
3. Apply AC power to IDU.

Self test is done in steps. Moving from one step to another is done by pressing mode button.
Step number is shown as a binary code display using the **O**PER, **T**IMER, **S**TBY, **F**ILTER LED's, as shown in the following table:

Step No.	WNG Binary Code			
	OPER	**TIMER**	**FILTER**	**STBY**
0	0	0	0	0
1.	0	0	0	1
2.	0	0	1	0
3.	0	0	1	1
4.	0	1	0	0
5.	0	1	0	1
6.	0	1	1	0
7.	0	1	1	1
8.	1	0	0	0
9.	1	0	0	1
10.	1	0	1	0
11.	1	0	1	1
12.	1	1	0	0
13.	1	1	0	1
14.	1	1	1	0
15.	1	1	1	1

During each step,

1. Cool LED'S – Is used for "Pass" indicator.
2. Heat LED'S – Is used for "Fail" indicator.

Built In Test Stepping Sequence is as following:

STEP 0: LEDS TEST

- Check all LEDS by observing blinking operation of all LEDS.
- Press Mode button once to proceed to step 1.

STEP 1: RESET BUTTON TEST AND BUZZER TEST

- Press RESET button once.
- Buzzer will beep as an indication of RESET button and buzzer operation.
- Press Mode button once to proceed to step 2.

STEP 2: LOUVER FULL OPEN TEST

- Observe louver to make sure that louver is fully open.
- Press Mode button once to proceed to step 3.

STEP 3: LOW FAN SPEED TEST

- Observe the indoor fan is set at LOW speed..
- Press Mode button once to proceed to step 4.

STEP 4: HIGH FAN SPEED TEST

- Observe the indoor fan is set at HIGH speed.
- Press Mode button once to proceed to step 5.

STEP 5: FAN TURN OFF TEST

- Observe the indoor fan is set turn off.
- Press Mode button once to proceed to step 6.

STEP 6: LOUVER FULL CLOSE TEST

- Observe louver to make sure that louver is fully close.
- Press Mode button once to proceed to step 7.

STEP 7: ICT SHORT/DISCONNECT TESTS

- COOL LED is turned on if ICT is passed, otherwise HEAT LED is turned on to indicate that ICT is short or disconnect.

- Press Mode button once to proceed to step 8.

STEP 8: RAT SHORT/DISCONNECT TESTS

- COOL LED is turned on if RAT is passed, otherwise HEAT LED is turned on to indicate that RAT is short or disconnect.
- Press Mode button once to proceed to step 9.

STEP 9: ODU POWER SUPPLY TEST

- Observe TEST-LAMP connected on the ODU power line. TEST-LAMP will be on as an indication of good supply power to ODU main board.
- Press Mode button once to proceed to step 10.

STEP 10: ON-BOARD EEPROM TEST

- COOL LED is turned on if EEPROM is passed, otherwise HEAT LED is turned on to indicate that bad EEPROM..
- Press Mode button once to proceed to step 11.

STEP 11 (WNG Only): TEST E.S.F Switch

- COOL LED is turned on if E.S.F is switched to on position.
- HEAT LED is turned on if E.S.F is switched to off position.

STEP 12 (WNG Only): TEST Fresh-Air Switch

- COOL LED is turned on if Fresh-Air is switched to on position.
- HEAT LED is turned off if Fresh-Air is switched to off position.

STEP 13 (WNG Only): Turn on Ionizer Relay

- COOL LED is turned on.
- HEAT LED is turned off.

STEP 14 (WNG Only): Turn off Ionizer Relay

- COOL LED is turned on.
- HEAT LED is turned off.

STEP 15: WATCHDOG TEST

- All LEDS blink and IDU will RESET into normal operating mode.

STEP 16: REMOTE CONTROL TEST

- Press Remote control ON button to turn on Air-conditioner.
- Unit will start to operate at the desired mode of operation.

Note:

- Built in test can be aborted any moment if jumper 9 is removed.

11.2 Outdoor Unit Controller Self Test

Self Test mode is used to test outdoor unit PCB hardware and connections.

Self Test indicators are as the follow:

1. STBY,STATUS and FAULT Led's are coded as a binary sequence for the stepping number.(excpt for the step zero. During this step the all 3 led's blink every second until step 1 is entered) .
2. STEADY ON binary coded led's – Is used for "Pass" indicator.
3. BLINKING binary coded led's – Is used for "Fail" indicator.
4. JP2TEST- is used for executing each step of the Test.

JP2 TEST-JUMPER acts like a normally close push-button switch. Remove JP2 TEST-JUMPER and insert it again to simulate a push-button switch. To guard ,against bounce time, JP2 TEST-JUMPER must be disconnected for at least one second before making contact. Every toggle action will proceed to the next step of the test as explained below. No skip or jump step is allowed.

ODU Board-Self-Test Entry Procedure

1. Disconnect All AC power to ODU.
2. Add a TEST-LAMP on P1 and P4 output port.
3. Connect a motor at the compressor output port.
4. Connect a stepper motor to EEV header.
5. Connect Outdoor FAN on P6 output port.

6. Insert Test Jumper on JP2 (PIN5 and PIN6).
7. Apply AC power to ODU.

Built In Test Stepping Sequence is as following:

STEP 0**:** SIX-COMPRESSOR CONTROL, RV, CCH, OFAN, and EEV TEST.

- All LEDS blinks.
- Six compressor control (/UP, /UN, /VP, /VN, /WP, /WN, CCH, RV), RV and CCH are turn on and off sequentially one by one. Use appropriate equipment to test compressor GATING SIGNAL.
- Observe outdoor FAN operation at medium speed.
- Observe Stepper motor for operation.
- Visual checks the TEST-LAMP on P1 header and TEST-LAMP on P4 header for toggle.

STEP 1**:** JP6, OCT SHORT/DISCONNECT and OFAN at MAX SPEED TEST.

- STBY LED is turned on STEADY if OCT is "PASS", Otherwise blinks to indicate shorted or disconnected OCT sensor ("OCTFAIL").
- Observe Outdoor FAN operation at Maximum speed.

STEP 2**:** JP5, CTT SHORT/DISCONNECT and COMPRESSOR OPERATION AT 60Hz.

- STATUS LED is turned on STEADY if CTT is "PASS". Otherwise blinks to indicate shorted or disconnected CTT sensor ("CTT FAIL").
- Observe Outdoor FAN operation at Maximum speed.
- Observe Compressor Operation at 60Hz (Motor turning).

STEP 3: JP4, OAT SHORT/DISCONNECT

- STBY and STATUS LED is turned on STEADY if OAT is "PASS". Otherwise blinks to indicate shorted or disconnected OAT sensor ("OAT FAIL").
- Verify outdoor FAN operation at Maximum speed.
- Verify compressor Operation at 60Hz.

STEP 4: JP3, TSUCT SHORT/DISCONNECT and COMPRESSOR TURN-OFF.

- FAULT LED is turned on STEADY if TSUCT is "PASS". Otherwise blinks to indicate shorted or disconnected TSUCT sensor ("TSUCT FAIL").
- Verify outdoor FAN operation at Maximum speed.
- Verify Compressor Operation at 0Hz (Motor Stop).

STEP 5: JP2, HST SHORT/DISCONNECT and OFAN TURN-OFF.

- STBY and FAULT LED is turned on STEADY if HST is "PASS". Otherwise blinks to indicate shorted or disconnected HST sensor ("HST FAIL").
- Verify outdoor FAN operation at zero speed.
- Verify Compressor Operation at 0Hz.

STEP 6: EEPROM TEST.

- STATUS and FAULT LED is turned on STEADY if EEPROM is "PASS". Otherwise blinks to indicate BAD EEPROM ("EEPROM FAIL").

STEP 7: WATCHDOG TEST.

- Unit Exit Built-In-Test and return to normal operating condition.

To go out of self test mode disconnect controller AC Power.

12 Diagnostics

12.1 Entering Diagnostics Mode

Pressing Mode button for long pressing in any operation mode, except Set-Up and Self Test modes will activate diagnostic mode by the acknowledgment of 3 short beeps and lighting of COOL and HEAT LED's.

12.2 Indoor Unit Diagnostics

In diagnostic mode, system problems / information will be indicated by blinking of Heat & Cool LED's. SB, OPERATE, TIMER and FILTER LED's will present unit multi ID as described in section **Error! Reference source not found.** of this spec.

The coding method will be as follow:
Heat led will blink 5 times in 5 seconds, and then will be shut off for the next 5 seconds.
Cool led will blink during the same 5 seconds according to the following table:

No	Problem	5	4	3	2	1
1	RT-1 is disconnected					
2	RT-1 is shorted					
3	RT-2 is disconnected					
4	RT-2 is shorted					
5	Communication mismatch					
6	No Communication					
7	No Encoder					
8	RV fault					
9	Outdoor Unit Fault					
…	Reserved					
16	Defrost protection					
17	Deicing Protection					
18	Outdoor Unit Protection					
19	Indoor Coil HP Protection					
…	Reserved					
25	EEPROM Not Updated					
26	Bad EEPROM					
27	Bad Communication					
28	Using EEPROM data					
29	Model A					
30	Model B					
31	Model C					
32	Model D					

- ON, - OFF

Notes:

1. Only one code is shown. Order of priority for diagnostics (by fault numbers) is 1-32.

12.3 Outdoor Unit Diagnostics

If any fault exist in the system, its fault will be shown according to the following coding method.

The last outdoor unit fault occurred in the system will be stored in the EEPROM.

If no fault exist in the system, no fault code will be displayed during normal operation mode.

When system enters diagnostics mode (through IDU communication), the last fault code will be displayed even if the system has recover from that fault. The last fault will be deleted from the EEPROM after the system has exit diagnostics mode (through IDU communication). The current system operation mode (cool/ heat/ off) will not be changed when system enters diagnostics.

The coding method is as follow:

STATUS LED is blinking 5 times in 5 seconds, and shut off for the next 5 seconds.

FAULT LED will blink during the same 5 seconds according to the following table:

No	Problem	5	4	3	2	1
1	OCT is disconnected	0	0	0	0	1
2	OCT is shorted	0	0	0	1	0
3	CTT is disconnected	0	0	0	1	1
4	CTT is shorted	0	0	1	0	0
5	HST is disconnected (when enabled)	0	0	1	0	1
6	HST is shorted (when enabled)	0	0	1	1	0
7	OAT is disconnected (when enabled)	0	0	1	1	1
8	OAT is shorted (when enabled)	0	1	0	0	0
9	TSUC is disconnected (when enabled)	0	1	0	0	1
10	TSUC is shorted (when enabled)	0	1	0	1	0
11	IPM/PFC Fault	0	1	0	1	1
12	Bad EEPROM	0	1	1	0	0
…	Reserved					
16	IDU/ODU Communication mismatch	1	0	0	0	0
17	No Communication	1	0	0	0	1
…	Reserved					
20	Heat sink Over Heating	1	0	1	0	0
21	Deicing	1	0	1	0	1
22	Compressor Over Heating	1	0	1	1	0
23	Compressor Over Current	1	0	1	1	1
…	Reserved					
27	Bad Communication	1	1	0	1	1

1 - ON, 0 - OFF

Only one code is shown. Order of priority is 1-24. Diagnostics is continuously ON as long power is on.

12.4 Demo Mode

Entering diagnostics when unit is operating in Cool/Heat mode, will switch unit to work in rated operation settings of compressor and fans.

12.5 Going out of Diagnostics

Any remote control command received during diagnostics will cause unit to exit diagnostic mode.

SW Parameters

Indoor Units SW Parameters

	R-22		R407c								
	WNG-9	WNG-11	WNG-9	WNG-11	WMN-18	PXD-9	PXD-11	PXD-18	K-9	K-11	K-18
Nominal Frequencies											
Cooling	72	72	TBD								
Heating	83	92									
Fan speeds [RPM]											
Cool VL	600	720									
Cool L	700	840									
Cool M	800	960									
Cool H	900	1080									
Cool Max	1050	1230									
Heat VL	650	650									
Heat L	800	960									
Heat M	900	1110									
Heat H	1000	1260									
Heat Max	1100	1350									
Protection Limits Value											
ICTDef1	6										
ICTDef2	4										
ICTDef3	0										
ICTDef4	-2										
ICTOH1	52										
ICTOH2	55										
ICTOH3	62										
ICTOH4	66										

Outdoor Units SW Parameters

	R-22		R407c		
	GC-9	GC-11	ONG3-9	ONG3-11	GC-18
Minimum Frequency	33	20	TBD		
Maximum Frequency	120	120			
Step 1	60	60			
Step 2	90	90			
Step 3	90	90			
Outdoor Fan Speeds					
Cooling Low	650	650			
Cooling Medium	650	750			
Cooling Max	690	800			
Heating Low	650	650			
Heating Medium	750	800			
Heating Max	800	800			
Protection Limits Value					
CTTOH1	99	99			
CTTOH2	100	100			
CTTOH3	113	113			
CTTOH4	120	120			
CCROC1	7	9			
CCROC2	8.5	9.5			
CCROC3	9	9.8			
CCROC4	9.5	10.5			

A/C Failures

	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
1	Power supply indicator (Red LED) does not light up.	No power supply	Check power supply, if power supply is OK, check display and display wiring, if OK, replace PCB.
2	Unit does not respond to remote control message	Remote control message not reached the indoor unit	Check remote control batteries, if batteries are OK, check display and display wiring, if OK, replace PCB.
3	Unit responds to remote control message but operate indicator (Green LED) does not light up	Problem with display PCB	Replace display PCB
4	Indoor fan does not start (louvers are opened and Green LED does light up)	Unit in heat mode and coil is still not warm.	Change to cool mode and check.
		Problem with PCB or capacitor	Change to high speed and Check power supply to motor is higher than 130VAC, if OK replace capacitor, if not OK replace controller
5	Indoor fan works when unit is OFF, and indoor fan speed is not changed by remote control command.	PCB problem	Replace controller
6	Compressor does not start	Electronics control problem or protection	Perform diagnostics, and follow the actions described below
7	Compressor stops during operation and Green LED remains on	Electronic control or power supply problem	Perform diagnostics, and follow the actions described below
8	Compressor is on but outdoor fan does not work	Problem with outdoor electronics or outdoor fan capacitor	Put unit to cool mode high speed with 16 degrees set point (summer) or heat mode high speed with 30 degrees set point (winter). Check power supply to motor is higher than 130VAC, if OK replace capacitor, if not OK replace controller
9	Unit works in wrong mode (cool instead of heat or heat instead of cool)	Electronics or power connection to RV	Check RV power connections, if OK, Check RV operation with direct 230VAC power supply, if OK, Replace outdoor controller.
10	All components are operating properly but no cooling or no heating	Refrigerant leak	Check refrigeration system.
11	Units goes into protections and compressor is stopped with no need	Control problem or refrigeration system problem	Perform diagnostics to find out what protection is active, and take action accordingly.
12	Compressor motor is generating noise and no suction occurs	Phase order to compressor is wrong	Check compressor phase order.
13	Water leakage from indoor unit	Indoor unit drainage tube is blocked	Check and open drainage tube.
14	Freezing of outdoor unit in heat mode and outdoor unit base is blocked with ice		Connect base heater.
15	Unit operates with wrong fan speeds or wrong frequency	Wrong jumper settings	Perform diagnostics to see unit model or if operating by EEPROM parameters.

Indoor Electronics Trouble Shooting

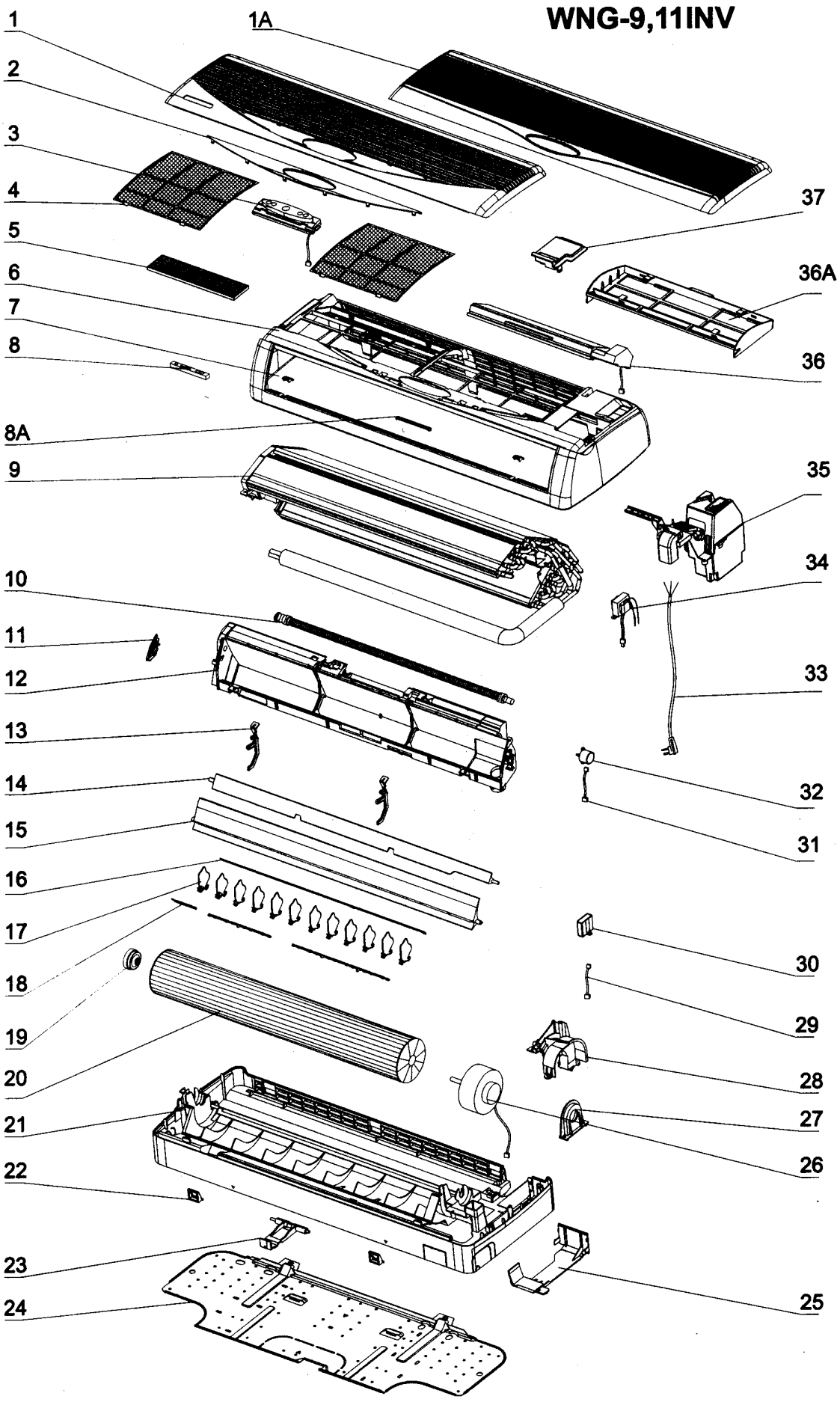
1	Thermistors failures of all types		Check Thermistors connections or replace Thermistors
2	Communication mismatch	Indoor and outdoor controllers are with different versions	Replace indoor controller
3	No Communication	Communication or grounding wiring is not good.	Check indoor to outdoor wiring and grounding
4	No Encoder	Indoor electronics or motor	Check motor wiring, if ok, replace motor, if still not ok, replace indoor controller.
5	RV fault		Check RV power connections, if OK, Check RV operation with direct 230VAC power supply, if OK, Replace outdoor controller.
6	Outdoor Unit Fault	Outdoor controller problem	Perform outdoor diagnostics.
7	EEPROM Not Updated	System is using ROM parameters and not EEPROM parameters	No action, unless special parameters are required for unit operation.
8	Bad EEPROM		No action, unless special parameters are required for unit operation.
9	Bad Communication	Communication quality is low reliability	Check indoor to outdoor wiring and grounding
10	Using EEPROM data	No problem. System is using EEPRRRROM parameters	

Outdoor Electronics Trouble Shooting

1	Thermistors failures of all types		Check Thermistors connections or replace Thermistors.
2	IPM/PFC Fault	Electronics problem	Check all wiring and jumper settings, if OK, replace electronics.
3	Bad EEPROM		No action, unless special parameters are required for unit operation.
4	IDU/ODU Communication mismatch	Indoor and outdoor controllers are with different versions	Replace indoor controller
	No Communication	Communication or grounding wiring is not good.	Check indoor to outdoor wiring and grounding
	Bad Communication	Communication quality is low reliability	Check indoor to outdoor wiring and grounding

WNG Indoor Unit Spare Parts List

No.	Part No.	Name	Total Quan.	Version
1	4518647	Grill A	1	1
1A	4519364	Grill B	1	1
2	4518648	Display panel	1	1
3	4519419	Display	1	1
4	4518665	Air Filter	2	1
5	4519132	Active Carbon Filter	1	1
6	4518734	Frame Assy.	1	1
7	4518653	Screw Cover	2	1
8	433133	Ionizer Unit(Optional)	1	1
8A	4519337	Ionizer Cover	1	1
9	4519374	Evaporator Assy(11INV)	1	1
	4518683	Evaperator Assy(9INV)	1	1
10	4518664	Draining Hose	1	1
11	4518682	Gear BoxAssy	1	1
12	4518733	Air Outlet Assy	1	1
13	4518646	Louver Support	2	1
14	4518638	Upper Flap	1	1
15	4518639	Lower Flap	1	1
16	4518642	Vert. Louver Link	1	1
17	4518640	Vert. Louver A	2	1
	4518641	Vert. Louver B	10	1
18	4518643	Vert. Louver Lock 1	1	1
	4518644	Vert. Louver Lock 2	1	1
	4518645	Vert. Louver Lock 3	1	1
19	4518662	Bearing Assy	1	1
20	4518661	Cross Flow Fan	1	1
21	4518730	Base Assy	1	1
22	4518656	Mounting Hook	2	1
23	4518657	Tube Lock	1	1
24	4518670	Installation Plate	1	1
25	4518654	Tube Bracket	1	1
26	4519864	Motor(PG type)	1	4
27	4518651	Motor Side Cover	1	1
28	4519410	Motor Cover Assy	1	1
29	4519900	Ionizer Cable A	1	1
30	433134	Ionizer Power	1	1
31	4519365	Step Motor Wire B	1	1
32	4518679	Step Motor	1	1
33	4520061	Power Wire (Elco)	1	1
		Power Wire (Electra)	1	1
		Power Wire (Airwell)	1	1
		Power Wire (Fagor)	1	1
34	4518868	Transformer	1	2
35	4520346	Control box Assy(WNG-9,11INV)	1	1
36	4518663	Electrostatic Filter (Optional)	1	1
36A	4519338	Filter Frame (Optional)	1	1
37	4518792	Terminal Cover	1	1


WNG-9,11INV
1
1A
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36A
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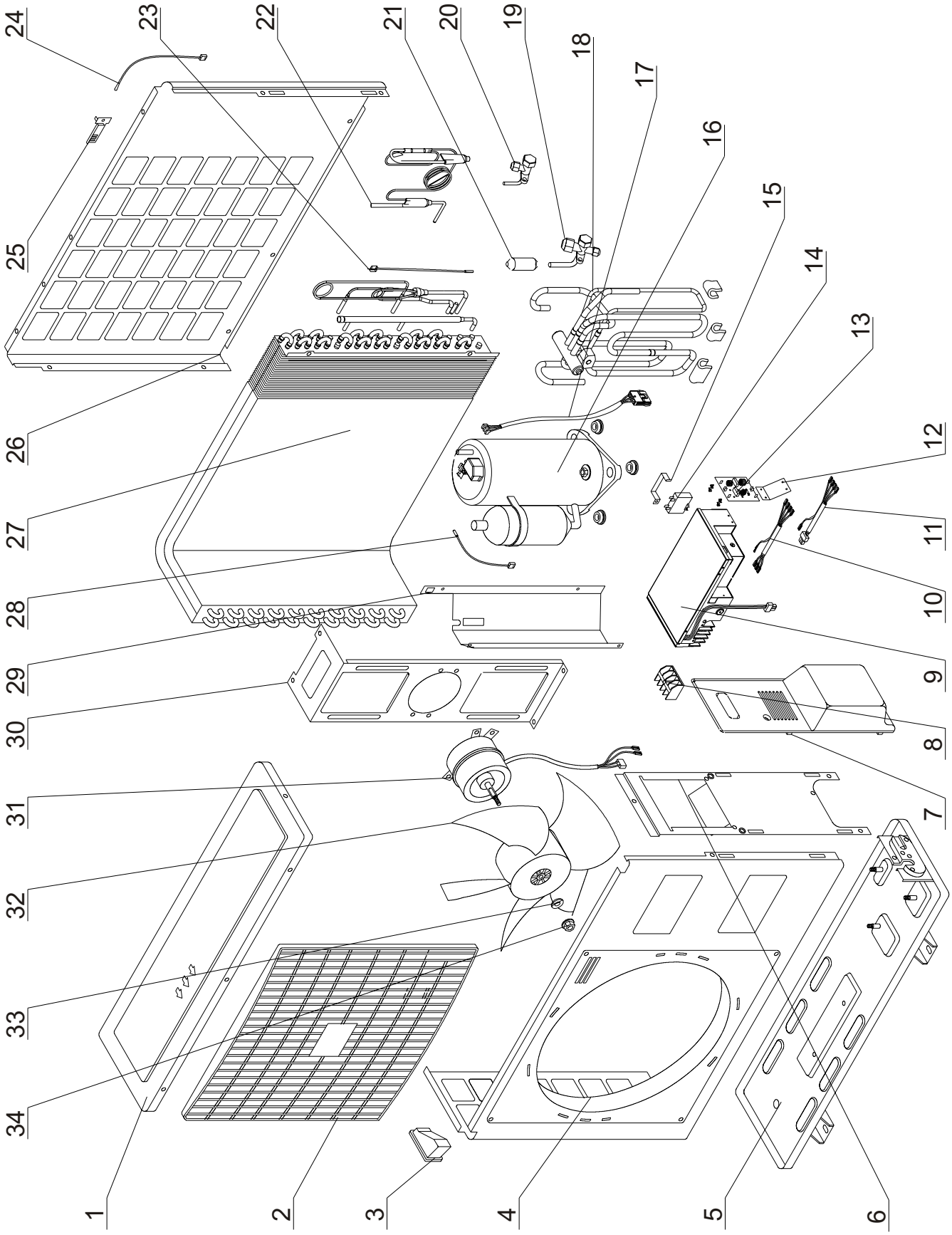
Components list of GC-9INV from explode drawing.

S/N	Part No.	Description	Unit
1	4516158	Cover panel Painting assy	1
2	372332	Fan cover	1
3	436358	L. lifter	1
4	4520249	front panel paint assy	1
5	4516907	PAINTING BASE ASSY.	1
6	4517374	SIDE PANEL ASSY.WITH PAINTING	1
7	4516857	BIG SIDE COVER	1
8	4519188	4 poles terminal block	1
9	4520347	HPI Control Box Eng.version (EHK P/N:906-093-01)	1
10	4520188	power filter wires.	1
11	4519187	AC-IN WIRINGS	1
12	4519322	Connective plate for ctrl box	1
13	4520100	Power filter PCB(EHK P/N:901-094-01)	1
14	4520101	capacitor 3uF	1
15	4520086	Capacitor Clip	1
16	-4516910	INVERTER COMPRESSOR ASSY KHV104	1
17	4520285	GC-9INV compressor wire	1
18	-4520385	4-way valve welding assy	1
19	4517682	LIQUID VALVE	1
20	4517683	GAS VALVE	1
21	4520522	muffle	1
22	-4520419	capillary welding assy	1
23	4518901	(OCT) OUTDOOR COIL THERMISTER(EHK P/N:135-038-01).	1
24	4518900	(OAT) OUTDOOR AIR THERMISTER(EHK P/N:135-039-01)	1
25	436527	Base sensor	1
26	4516156	Rear panel Painting assy	1
27	-4520400	condensor assy	1
28	4518484	Thermistor(Comp.Top)(EHK P/N:135-037-00)	1
29	4518497	PATITION	1
30	323156	Motor support assy	1
31	4518505	Motor YDK-20Q-6	1
32	293289	Fan	1
33	203020	Washer φ4	1
34	201130	Nut M4	1

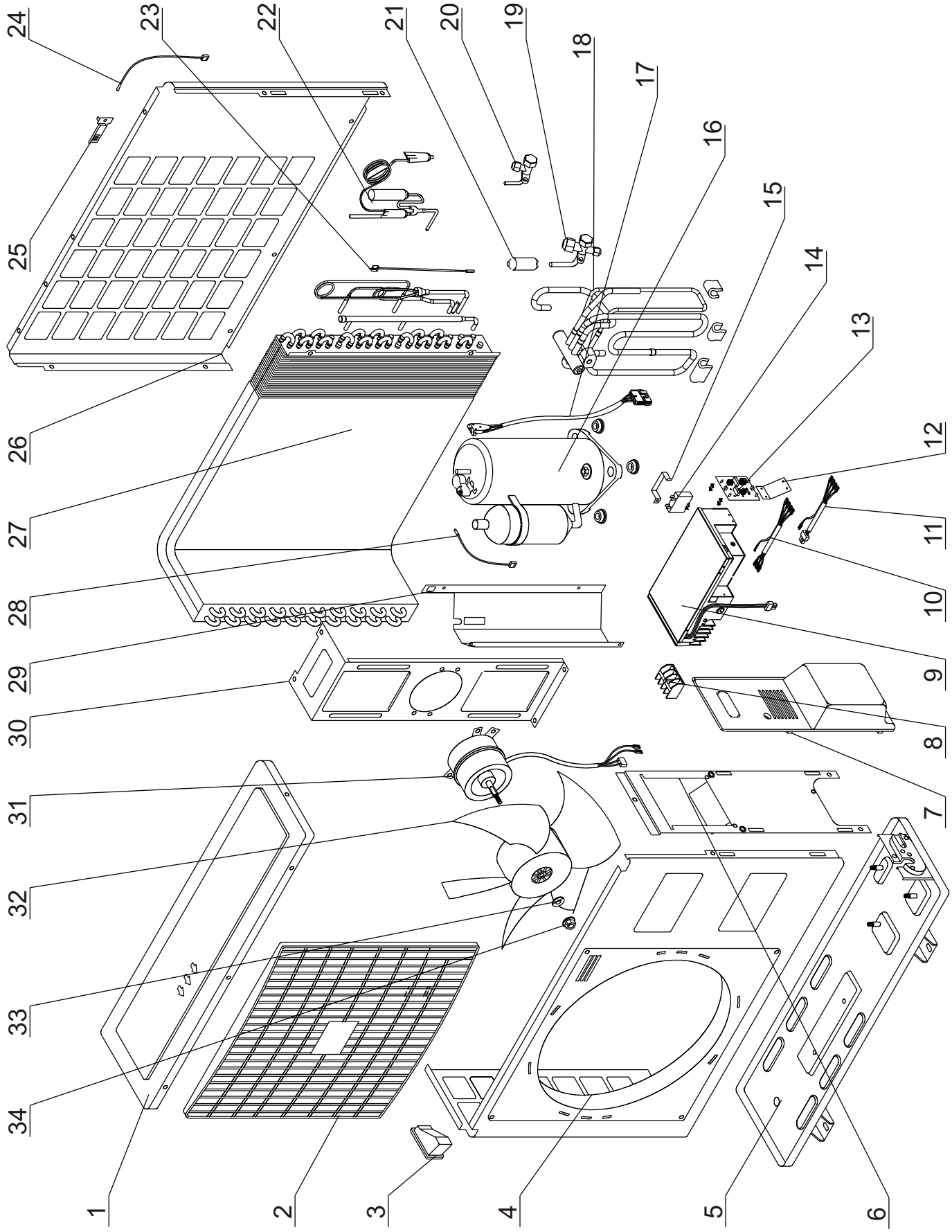
Exploded view GC-9INV



Components list of GC-11INV from explode drawing.

S/N	Part No.	Description	Unit
1	4516158	COVER PANEL PAINTING ASSY.	1
2	372332	FAN COVER	1
3	436358	L. LIFTER	1
4	4520249	FRONT PANEL PAINT ASSY.	1
5	4516907	PAINTING BASE ASSY.	1
6	4517374	SIDE PANEL ASSY.WITH PAINTING	1
7	4516857	BIG SIDE COVER	1
8	4519188	4 POLES TERMINAL BLOCK	1
9	4520347	HPI Control Box (EHK P/N:906-093-01)	1
10	4520188	POWER FILTER WIRES	1
11	4519187	AC-IN WIRINGS	1
12	4519322	Connective plate for ctrl box	1
13	4520100	Power filter PCB(EHK P/N:901-094-01)	1
14	4520101	capacitor 3uF	1
15	4520086	Capacitor Clip	1
16	4518486	INVERTER COMPRESSOR ASSY SHV130	1
17	4518507	WIRINGS FOR COMP	1
18	-4518498	4-WAY VAVLE	1
19	4517682	LIQUID VALVE	1
20	4517684	GAS VALVE1/2"	1
21	4518504	MUFFLER	1
22	-4520387	capillary 2.6*1.6*700	1
23	4518901	(OCT) OUTDOOR COIL THERMISTER(EHK P/N:135-038-01).	1
24	4518900	(OAT) OUTDOOR AIR THERMISTER(EHK P/N:135-039-01)	1
25	436527	Base sensor	1
26	4516156	Rear panel Painting assy	1
27	4518490	CONDENSOR ASSY(32BP) .	1
28	4518484	Thermistor(Comp.Top)(EHK P/N:135-037-00)	1
29	4518497	PATITION	1
30	323156	Motor support assy	1
31	4518505	Motor YDK-20Q-6	1
32	293289	Fan	1
33	203020	Washer φ4	1
34	201130	Nut M4	1

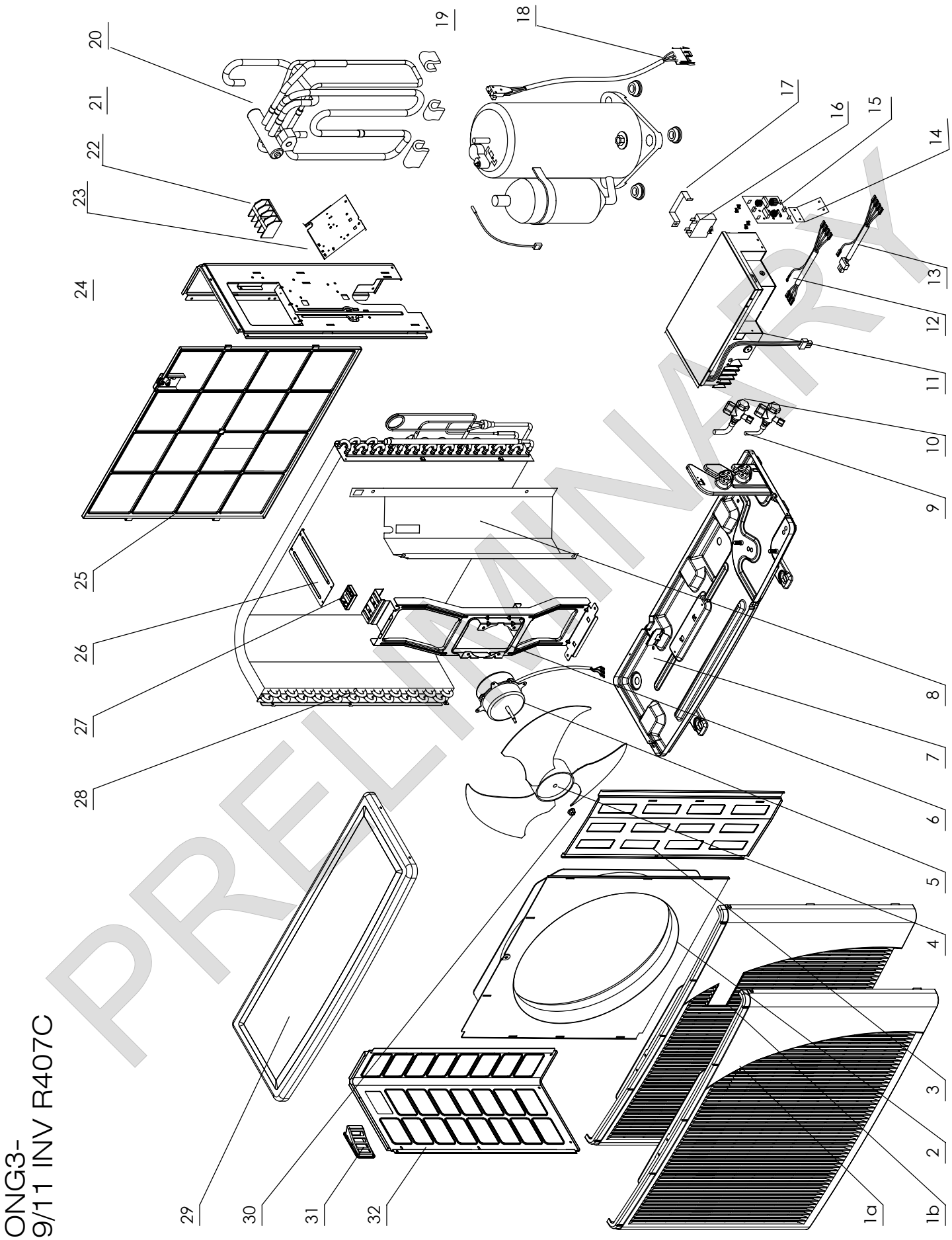
Exploded view GC-11INV



Components list of ONG 3-9/11INV from explode drawing .

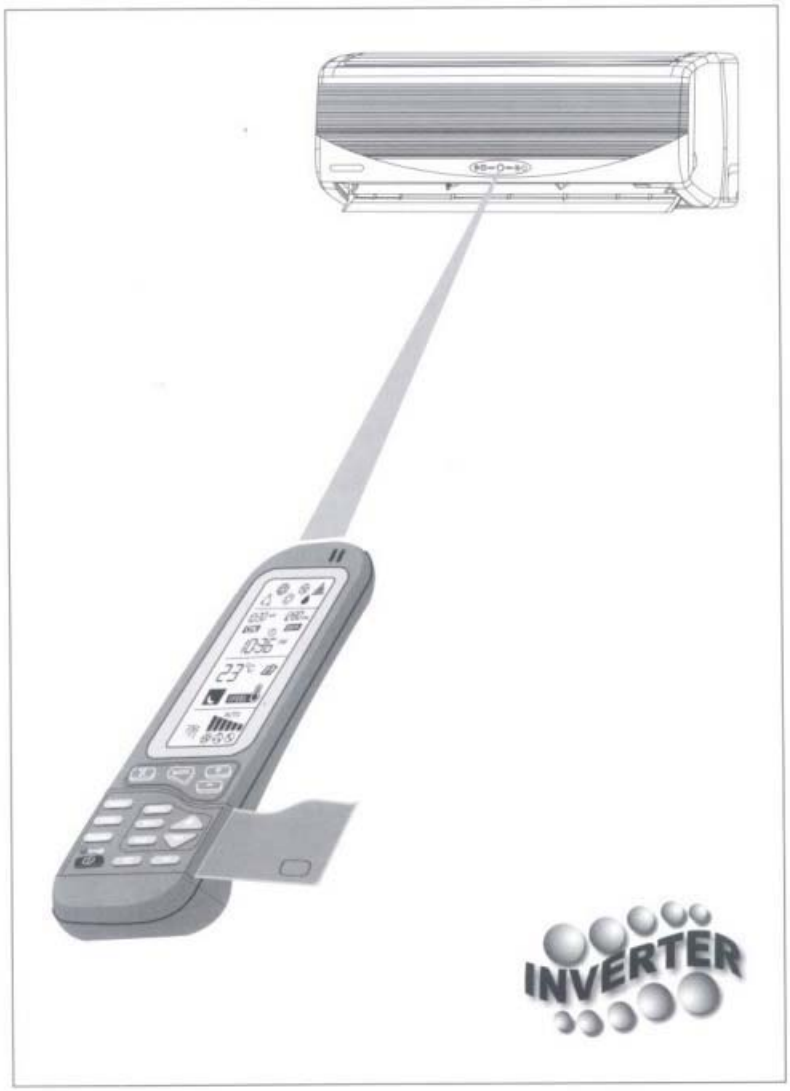
S/N	Part No.	Description	Unit
1a	433218	Front panel A	1
1b	433219	Front panelB	1
2	433221	Air Inlet Ring-420	1
3	433223	Painting Insulation Plate	1
4	4519251	Fan	1
5	4523058	Fan Motor	1
6	433215	Motor support	1
7	4523060	Base Painting Assy.	1
8	4522978	Partition	1
9	4521281	Gas valve (9INV)	1
	4521282	Gas valve (11INV)	1
10	4521280	Liquid valve	1
11	4523116	HPI Control Box Eng.version (EHK P/N:906-094-00)	1
12	4520188	Power filter wires.	1
13	4519187	AC-IN WIRINGS	1
14	4519188	4 poles terminal block	1
15	4520347	HPI Control Box Eng.version (EHK P/N:906-093-01)	1
16	4520188	Power filter wires.	1
17	4519187	AC-IN WIRINGS	1
18	4520285	Wire assy	1
19	4523055	BG130 compressor assy	1
20	4523448	4-way valve welding assy (9INV)	1
	4523449	4-way valve welding assy (11INV)	1
21	4518484	Thermistor(Comp.Top)(EHK P/N:135-037-00)	1
22	4519188	4 poles terminal block	1
23	4522979	Electrical connective plate	1
24	4520031	Right Side Plate	1
25	4523494	Capillary assy (9INV)	1
	4523497	Capillary assy (11INV)	1
26	433228	Back Side Net	1
27	433216	Bridge	1
28	4517381	Insulation	1
29	4523498	Condenser	1
30	4519614	Painting Top Cover	1
31	4519300	Fan Nut M5 Left Rotation	1
32	433225	Right Handle	1
33	4519607	Left side panel	1

PRELIMINARY



PRELIMINARY

AIR CONDITIONER SPLIT WALL MOUNTED ENGLISH



PROGRAMMING AND OPERATING MANUAL

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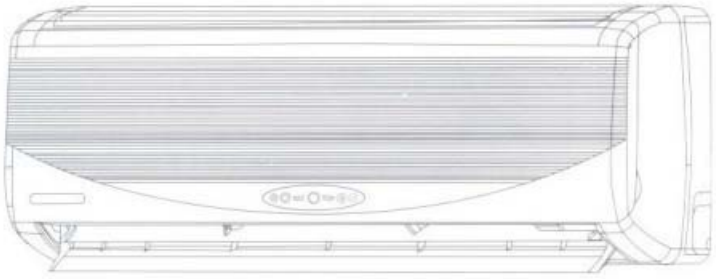
IF YOUR AIR CONDITIONER IS FOR COOLING ONLY, PLEASE DISREGARD THE HEATING INSTRUCTIONS

*PLEASE READ THESE INSTRUCTIONS **BEFORE** OPERATING THE AIR CONDITIONER*

INTRODUCTION

Dear customer
The Inverter air condititoner you have purchased is one of the most advanced unit of its kind. The inverer air conditioner is a variable capacity air conditioner. Unlike other models, it can adjust its capacity according to the user setting and the environmental cinditions, thus saving up to 30% of the seasonal power consumption, while keeping maximum comfort level. This modern unit is also equipped with an ionizer (optional) and an Electro static Filter (optional) to maximize your indoor air quality. Detailed instruction as to the inverter air conditioner functions, and way of operation are provided in the following pages.

- Cooling air in the summer.
- Dehumidifying the air at high humidity conditions.
- Heating.
- Ventilation.
- AUTO



OPERATING TEMPERATURE RANGE:
(According to T1 temperature condition)

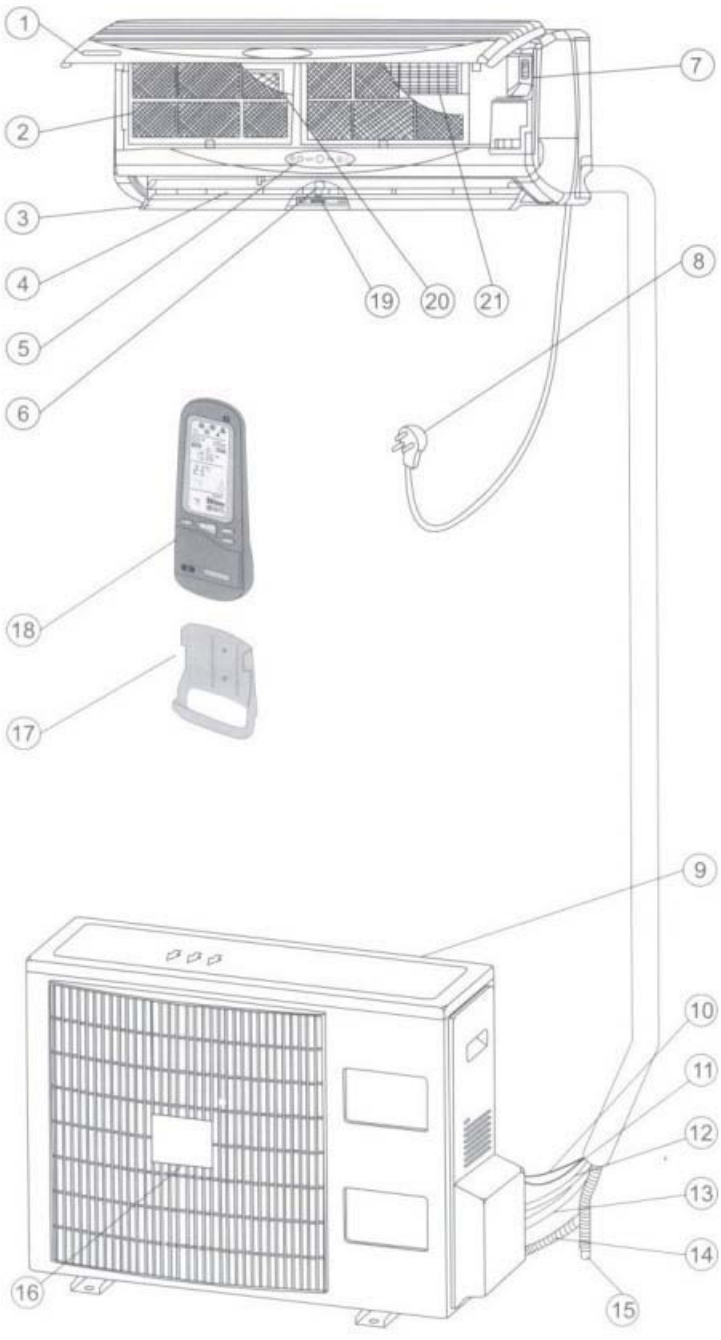
Cooling: *21° ~ 43°C*

Heating: *-7° ~ 21°C*

IMPORTANT NOTICE:

- *This air conditioner must be grounded to protect against electrical shock.*
- *Installation of the air conditioner must be performed by an experienced air conditioning installer, observing good refrigeration practice.*
- *Electrical connections and power cord replacement should only be made by authorized electricians and in accordance with electrical regulations and local codes.*
- *Failure to comply with the manufacturer's installation and operation instructions could affect the performance of the air conditioner and the validity of the warranty.*

SYSTEM DESCRIPTION



1.Air intake grill
2.Air filter
3.Supply air flap
4.Air outlet
5.unit's indicater
6.Horizontal Air flow
Deflecting lovers
7.On unit's controls
8.Power cord
9.Outdoor unit air intake
10.Power cable
11.Air-fresh cintrols wire
(optional)
12.Liquid line
13.Suction line
14.Air-fresh hose (optional)
15.Drain hose
16.Outdoor unit air outlet
17.Remote controls holder
18.Remote control
19.Ionizer (optionol)
20.Air purifying filter
21.Electrostatic filter
(optional)

MODES OF OPERATION, FUNCTIONS AND FEATURES

COOL	Cools, dehumidifies and filters the room air. Maintains desired room temperature.
HEAT	Heats and filters the room air. Maintains desired room temperature.
AUTO	Automatically switches from COOLING to HEATING or from HEATING to COOLING, maintaining the desired temperature according to the room conditions.
DRY	Dehumidifies and softly cools the room In DRY Mode, the air conditioner operates at an increased dehumidifying power. This function is recommended to be used when temperature is rather low but the humidity is high.
FAN	Recirculates and filters the room air. Maintains constant air movement in the room.
AUTO FAN	The air conditioner automatically calculates the required capacity and adjusts the indoor fan speed accordingly. When in AUTO FAN, the inverter air conditioner can use its full capacity range, and can generate up to 130% of its nominal capacity (if needed), The inverter advantages are maximized when AUTO FAN mode is selected.
HOT KEEP	Modes of operation:HOT KEEP-Replace text with the following text:"When starting in heat mode, Indoor fan will remain off, unit indoor coil temperature reaches an adequate temperature. This HOT KEEP feature prevents un. Comfortable cold air drafts.
I FEEL	Switches the temperature sensing point to the place where the remote control is located. (Generally the temperature sensor is located behind the intake grille of the air conditioner). This function is designed to provide a personalized environment by transmitting the temperature control command from the location next to you. The communication between the Remote Control and the unit is done by infra-red signal. Therefore, in using this function, the Remote Control should always be aimed, without obstructions, at the air conditioner.
TIMER	Real time control and display, automatically turns the air conditioner ON and OFF according to the time of day setting, ensuring comfort conditions before returning home, without wasting electricity. It turns the air conditioner off automatically when sleeping.
SLEEP	Designed to create comfortable sleeping conditions. When in COOLING mode, the temperature rises one degree centigrade after each consecutive hour, up to three hours, from the start of the mode. The temperature rise prevents the feeling of over-cooling while sleeping (when your body is at rest). In HEATING mode the reverse occurs; the air conditioner lowers its temperature one degree every hour. When in SLEEP mode, the air conditioner will be automatically turned off after seven hours. The result is a more comfortable and invigorating sleep, which leaves you feeling fresh and energetic in the morning.

AUTO FLAP	The air flap (louver) is automatically positioned for the most suitable blow-out angle, when COOL, HEAT, DRY or FAN modes are selected. When the air conditioner is turned off, the flap will close automatically for an aesthetic appearance.
VERTICAL AIR SWING	Automatic swing of supply air in vertical direction. The flap moves automatically in upward and downward direction to spread the conditioned air evenly throughout the room.
AIR DIRECTION POSITIONING	Manual positioning of the air flap to provide desirable air flow angle.
ROOM TEMPERATURE	Measures and displays room temperature.
BUZZER	A soft buzzer will sound from the indoor unit display to indicate that a command sent by the remote control has been accepted and stored in the unit's memory. This feature may be easily canceled by the user from the display panel.
ON UNIT OPERATION	The air conditioner can be turned ON for COOLING or HEATING or be turned OFF directly from the indoor unit display panel without the use of the remote control.
3-MIN. DELAYED RUN	The compressor is protected by a three-minute delayed restart.
LOCK	Freezes the last operation setting on the remote control. When LOCK is activated, the remote control will not be able to control the air-conditioner.
MEMORY	The microprocessor retains the last data entry whether or not the unit is plugged in. Therefore, when the unit restarts after a power distruption or failure, it will resume operating in the same mode as before the power was disrupted.
FRESH AIR (optional)	This function can induct the fresh air from outside into the room and make your room more fresh.
ELECTROSTATIC FILTER (optional)	They are capable of capturing small particles down to 0.1 microns, Such as atmospheric and house hold dust, coal dust, insecticide dust, mites, pollen, pet dander, tobaceo smoke particles, cooking smoke and grease, mold fungi, bacteria, viruses and more.
IONIZER (optional)	Ionizer make the air more fresh and more comfort. Slide switch (O) to the ON position to activate the ionizer. The blue light indicator (N) on the unit will light up indicating the ionizer in operation. To cancel the operation set slide switch to OFF position **Important Notice:** When the air-conditioner is turned OFF or if the indoor fan stops operation the IONIZER stops automatically.

USE OF WIRELESS REMOTE CONTROL

PRIOR TO OPERATION

Prior to operating your air conditioner, make sure that:

- *The indoor unit is properly plugged into power. (Except for multi-split models).*
- *Indicator (G) on the unit's display is lit, meaning that the air conditioner is ready to accept your remote control commands.*
- *The red tab protecting the remote control battery has been removed.*
- *For clock setting see page 11.*

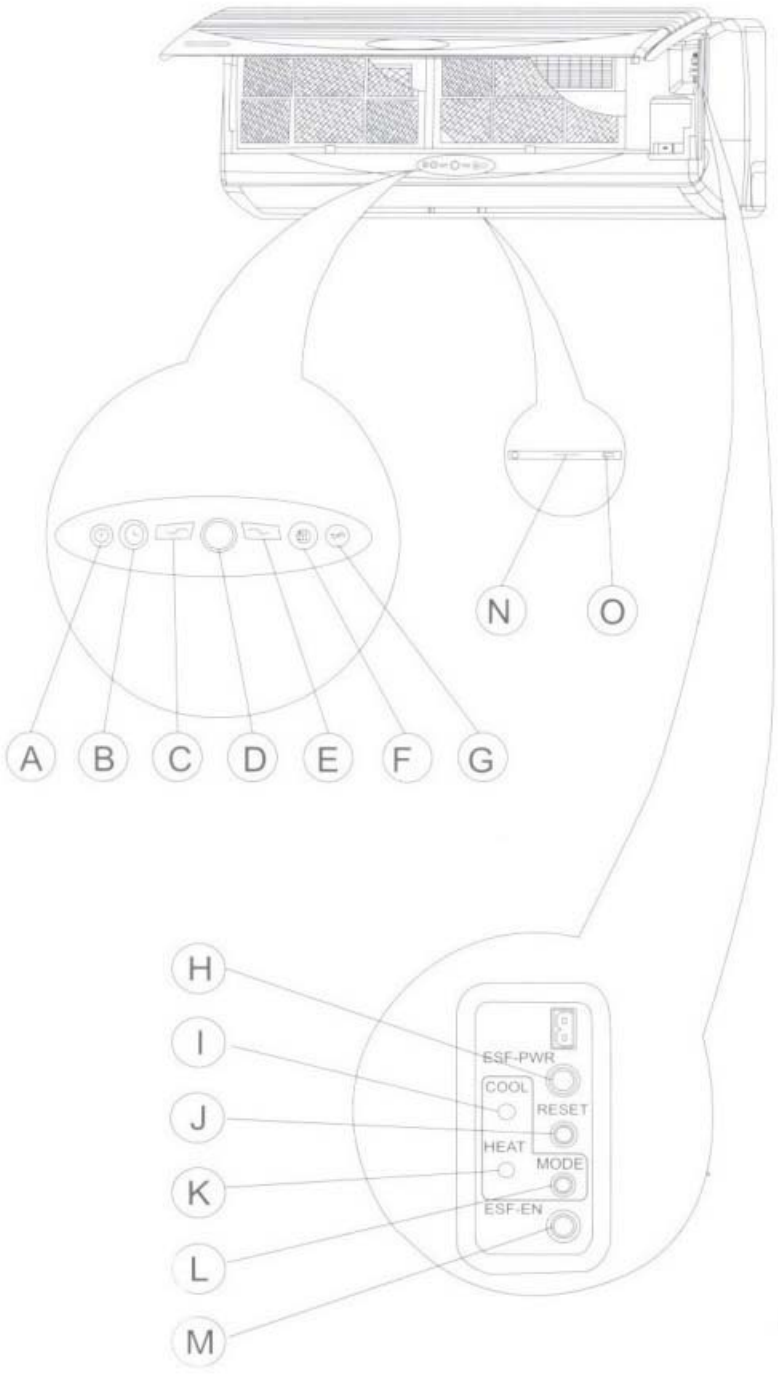
WIRELESS REMOTE CONTROL PUTS ALL FUNCTIONS AT YOUR FINGERTIPS

REMOTE CONTROL HOLDER

Use the remote control holder when unit is not in use. Remote control can be slipped in or out its holder.

- *Aim at the infrared signal receiver on the room air conditioner when operating.*
- *The remote control signal can be received at a distance of up to about 8 m.*
- *Be sure that there are no obstructions between the remote control and the signal receiver.*
- *Do not drop or throw the remote control.*
- *Do not place the remote control in a location exposed to direct sunlight, or next to a heating unit, and/or other heat source.*
- *Do not expose the air conditioner signal receiver (D) to a strong light such as fluorescent lamp or sunlight*

ON-UNIT INDICATORS AND CONTROLS



A. Operation indicator
Lights up during operation.
B. Timer indicator
Lights up during timer and sleep operation.
C. Fresh-air indicator
Lights up when the fresh-air operation.
D. Signal receiver
Receiver signals from the remote control.
E. Fresh-air button
Used to switch the fresh-air on or off.
F. Filter indicator
Lights up when air filter requi cleaning.
G. Stand-by indicator
Lights up when the unit is connected to power.
H. Electrostatic filter operation button
Used to switch the Electrostati filter on or off.
I. Cooling indicator
Lights up only when mode (L) is pressed.
J. Reset button
Press to turn off the filter indicator or cancel the buzzer announcer.
K. Heating indicator
Lights up when mode (L) is pressed.
L. Unit mode button
Used to switch the unit for cooling or heating without th remote control.
M. Electrostatic filter safety but
Turn off the Electrostatic filte when you open the grille.
N. Ionizer indicator
Lights up during the ionizer is open.
O. Ionizer on/off
Used to switch the ionizer.

REMOTE CONTROL

Note: Open the cover to reach the control buttons.

1. *START/STOP button*
2. *Operation mode selection button*
   COOLING
   HEATING
   AUTO COOL / HEAT
   DRY
   FAN
3. *I FEEL temperature sensing mode button*
4. *FAN SPEED and AUTO FAN button*
5. *Room temperature UP button*
6. *Room temperature DOWN Button*
7. *SLEEP button*
8. *Airflow direction MANUAL positioning control button*
9. *Airflow direction AUTO-CONTROL button*
10. *TIMER button*
11. *TIMER UP button*
12. *TIMER DOWN button*
13. *LCD operation display*
14. *I FEEL sensor*
15. *Infrared signal transmitter*
16. *ROOM temperature button*
17. *TIMER SET button*
18. *TIMER CLEAR button*
19. *LOCK button*
20. *Transmission sign*

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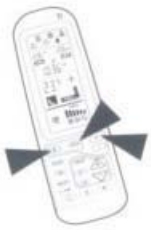
OPERATION PROCEDURE

TURNING ON THE AIR CONDITIONER

Press START/STOP button (1) to turn the air conditioner on. Indicator (B) on the air conditioner will light up, indicating that the unit is in operation. Note that the LCD operation display (13) will always show the last mode of operation and previous function used.
Follow the instructions if you choose to change the control settings; otherwise, the air conditioner will start and operate in the same mode and functions prior to being turned off.

VENTILATING OPERATION

Select the ventilating mode by pressing MODE button (2). Switch to the desired fan speed by pressing FAN speed button (4).



COOLING OPERATION

Select the COOLING mode by pressing MODE button (2). Switch to the desired FAN SPEED or to AUTO FAN by pressing button (4). Select suitable temperature setting.

COOLING OPERATION WITH AUTO FAN MODE

This operation starts with the highest air flow in order to quickly lower the room temperature. It will then automatically switch to the low air flow to quietly maintain the selected temperature.

HEATING OPERATION

Select the HEATING mode by pressing MODE button (2). Switch to the desired FAN SPEED or to AUTO FAN by pressing FAN button (4). Select suitable temperature setting.

HEATING OPERATION WITH AUTO FAN MODE

This operation starts with the highest air flow in order to quickly raise the room temperature. It will then automatically switch to a lower air flow to quietly maintain the selected temperature. HEATING with AUTO FAN will automatically provide the user with the HOT KEEP function. The fan will be turned off when the indoor coil temperature is not sufficiently hot to prevent uncomfortable cold air drafts.

AUTO COOLING/HEATING OPERATION

Select the AUTO mode by pressing MODE button (2). Switch to the desired FAN SPEED or to AUTO FAN by pressing button (4). Select suitable temperature setting. The air flap will automatically move to either horizontal air delivery for cooling or to vertical air delivery for heating. At start, the air conditioner will select its mode of operation according to the room temperature and the temperature setting.

DRY OPERATION

Select the DRY mode by pressing MODE button (2). Select the suitable temperature setting. While in DRY mode, the air conditioner will operate at low fan speed, regardless of the fan setting on the LCD operation display. Fan might terminate operation from time to time to prevent from over cooling.

SELECTING THE TEMPERATURE

Press TEMP buttons (5) or (6) to change the temperature setting in the LCD operation display (13). The temperature setting is shown in degrees centigrade. A higher number indicates a higher room temperature. A lower number indicates a lower room temperature

I FEEL FUNCTION

Press I FEEL button (3) to activate the I FEEL function. Thermometer sign will appear on the LCD operation display (13). Select suitable temperature setting.
Make sure that the remote control unit is aimed at the air conditioner, with the I FEEL sensor (14) in front. Prevent the I FEEL sensor from being affected by heat sources such as lamps, heaters, direct sun, etc. or from being directly affected by the air conditioner air flow. These may cause the sensor to transmit the wrong temperature data, thereby disturbing the performance of the I FEEL function.

SLEEP FUNCTION

Press the SLEEP button (7) to select the SLEEP function. When the sleep function is activated the air conditioner will be automatically turned OFF after seven hours. If at the same time TIMER is activated, as well, the air conditioner will be turned ON and OFF according to the TIMER setting.
To cancel the SLEEP function press on one of the following :

- START/STOP button (1)
- SLEEP button (7)

TIMER OPERATION

Press TIMER select button (10) to activate the timed operation mode. Each time the TIMER button (10) is pressed, one of the following four types of operation modes will appear on the LCD display. The operation modes are sequenced in the direction of arrow. Indicator (C) on the air conditioner will light up during TIMER operation:

Note: After power failure (when the unit is in timer mode) the unit will be automatically turned to stand-by mode and the timer operation will be cancelled. To resume the timer operation follow the instructions above.

TIMER OPERATING MODES

I. TIMER ON

This mode enables you to set a start operating time. Press the TIMER button (10) till the ON sign blinks. Start time can be adjusted using up and down buttons (11) and (12) respectively. Press SET button (17) to activate the timer.

***Example**: Operation is restored at 10:30 AM.*

II. TIMER OFF

This mode enables you to set the stop of operation. Press the TIMER button till the OFF sign blinks. Time can be adjusted using up and down buttons (11) (12) respectively. Press SET button (17) activate the timer.

***Example**: Operation stops at 12:00 PM (24:00 hours).*

IV. CLEAR

Use this mode to cancel timer operation. Press CLEAR button (18), timer operation will terminate and the LCD display will be cleared for each timer mode.

***Note**: If timer button (10) is selected and neither time adjust, SET, or CLEAR buttons are pressed within 15 seconds, the timer operation will be cancelled and the last set-up will be displayed.*

III. TIMER ON AND OFF

This mode enables you to set the start and stop time of operation. Press the TIMER button (10) till the OFF sign blinks. By pressing again the ON sign blinks. Time can be adjusted by using the up and down buttons (11) and (12), respectively. Press SET button (17) to activate the timer.

***Example**: Operation is restored at 10:30 and stops at 12:00 PM (24:00 hours).*

ROOM TEMPERATURE DISPLAY

By pressing on ROOM temperature, button (16), the measured room temperature and the room temperature sign will be displayed.

To cancel the ROOM Temperature display press on one of the following:

- Press again on ROOM temperature button (16).
- Change of MODE button (2)

Note: Room temperature range is between 0°C and 36°C in 1°C increments. Display should show "HI" or "LOW" to represent temperature that is above 36°C or below 2°C.

AIR DIRECTION OPERATION

1. **Air Direction Positioning**
   Press button (8) to position the air flap to any desired angle.

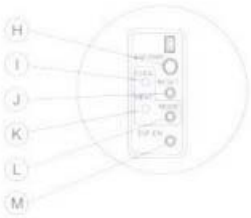
2. **Automatic Vertical Air Swing**
   Press button (9) to activate the auto air swing. Press button (8) to deactivate this function.

TURNING OFF THE AIR CONDITIONER

Press START/STOP button (1) to turn off the air conditioner. Indicator (B) on the air conditioner will be turned off. Indicator (A) will stay lit, indicating that the air conditioner is in STAND-BY mode and ready to accept any new command from the remote control. The remote control LCD will display the clock time. The last operating set-up will be kept for the next operation.

ON-UNIT OPERATION

If the air-conditioner cannot be operated by the Remote Control unit, it can be turned on for cooling or heating, or completely turned off, by pressing MODE button (L) on the air-conditioner. The MODE button will change the operating status of the unit between - COOLING - HEATING - STAND -BY positions, every time it is pressed. Indicators (I),(K) or (G) will light up respectively, to indicate in which mode the air-conditioner operates.
On units for Cooling only, do not set MODE switch on HEAT position.



CURRENT CLOCK TIME SET

Clock setting is performed when batteries are inserted. The remote control displays the setting and the clock display will blink "0:00" or "12:00" AM (AM sign will blink, too) till a new time is set.
For clock setting, use buttons (11) and (12) for setting the hours and minutes, respectively, and then press timer SET button (17). The clock setting can be also performed by pressing timer SET button (17) for 5 seconds.
The clock display will blink, for new setting follow the steps described above.

LOCK FUNCTION

By pressing LOCK button (19), the remote control will lock the last operation program. All the function buttons will be inoperative, including START/STOP button. By pressing LOCK button (19) again the remote control will be released from its locked position. When lock mode is functioning, the transmission sign (20) will be on.

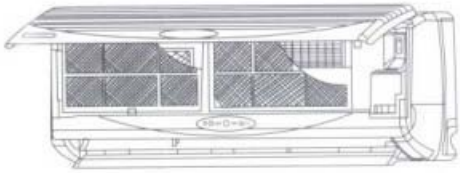
PROTECTION MODES

Your air conditioner includes several automatic protection modes, which enables you to use it virtually at any time and in any season, regardless of the outdoor temperature. Some of the protection modes are listed below:

Mode	Operation conditions	Protection from	Controlled remedy
Cooling and Dry	Low outdoor temperature	Indoor coil freezes up	Stops compressor when approaching freezing conditions Resumes operation automatically. Operating indicator(A) blinks.
	High outdoor temperature	Outdoor coil overheating	Stops compressor when approaching over heating conditions. Resumes operation automatically. Operating indicator(A) blinks.
Heating	Low outdoor temperature	Outdoor coil ice build up	Reverses Operation from heating to cooling for short periods to de-ice outdoor coil. Oiperating indicator (A) blinks.
	High indoor or outdoor temperature	Indoor coil overheating	Stops compressor when approaching high indoor coil temperature. Resumes operation automatically. Oiperating indicator (A) blinks.

CARE AND MAINTENANCE

Before performing any maintenance procedure, make sure to disconnect the air conditioner from the power.



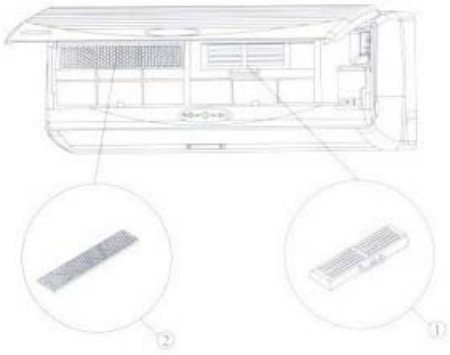
CLEANING THE AIR FILTER

- Your air conditioner is provided with a filter cleaning indicator. When the indicator (F)lights up, the filters should be removed for cleaning
- To remove the air filters, lift up the panel. push the air filters up slightly to unlock them. pull out the filters, Clean the filter by washing in warm soapy water and dry thoroughly. align and fit the filters in place. close the panel by pushing it in the center to lock it in place.
- Reset button (J) to turn off indicator (F).

CLEANING THE ELECTROSTATIC FILTER

- The electrostatic filter should be removed from the unit and cleaning once three month. The procedure is shown as following;

1 open the front panel
2 push the hook on the filter and pull out the electrostatic filter(Fig ①)
3 wash the filter with the warm soapy water and dry thoroughly
4 push the electrostatic filter into the right position
5 close the front panel
Note: the above procedure is used for cleaning the electrostatic filter.



PURIFICATION FILTER REPLACEMENT

- The air purifying filter should be removed form the unit and replaced once a year, show as following:

1 pulling out the filter(Fig ②)
2 replacing the filter in its place.

DO NOT OPERATE THE UNIT WITHOUT FILTERS!

CLEANING THE AIR CONDITIONER

- Wipe the unit with a soft dry cloth or clean it using a vacuum cleaner
- do not use hot water or volatile materials which could damage The surface of the air conditioner.

AT THE BEGINNING OF THE SEASON

- Make sure there are no obstacles blocking the flow of inlet or outlet air, in both indoor and outdoor units.
- Make sure the power is properly connected.

PROTECT THE ELECTRONIC SYSTEM

- Indoor unit and remote control must be at least 1 meter away from a TV, radio or any other home electronic appliance.
- Protect the inner unit from direct sun or lighting.

REMOTE CONTROL BATTERY CHANGE

- Remove the batteries from the remove control as show.
- Use two 1.5 volt size AAA batteries.

OPERATING TIPS

- Set a suitable room temperature; excessively low room temperature is not good for your health and wastes electricity. Avoid frequent setting of the temperature.

- During cooling, avoid direct sun. Keep curtains and blinds closed. Close doors and windows to keep the cool air in the room.

- Avoid generating heat or using of heating appliances while the air conditioner in cooling mode.

- Make sure that the air flap is positioned properly: horizontal flow in cooling and downward vertical flow for heating.

- Keep the room temperature uniform by adjusting the left/right vertical air blades.

- Position the air flap and the left/right air blades in such a manner as to prevent your body from being exposed directly to air drafts.

- During prolonged operation, ventilate the room occasionally by opening a window from time to time.

- In a power failure, the microprocessor memory is retained. When restarted, operation will be resumed in the last mode of operation. However, if the timer was used, the unit will be turned off by the timer only if the remote control is aimed at the unit. Otherwise the power failure will cause the timer data to be erased from the microprocessor memory.

- After turning on, allow more than 3 minutes for cooling, heating or dry operation to start.

- When DRY mode is used, make sure that the room temperature is between 20° and 27°C. When used out of this range, the unit may protect itself and become inoperative.

- When COOL or DRY modes are used, make sure that the room's relative humidity is below 78% If the unit is used for a prolonged periods of time in high humidity, moisture may form on the air outlet and drip down.

- Remote control signals may not be received if the indoor unit controls cover is exposed to direct sunlight or strong light. In such a case, block the sunlight or dim the lighting.

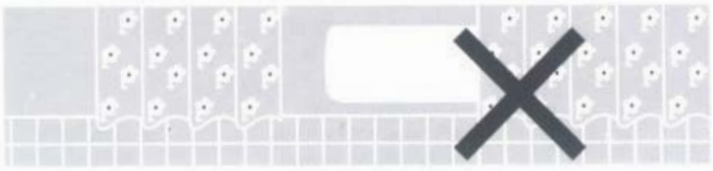
- The remote control is operative in a range of 8 meters. If you are out of range, the remote control may have difficulties in transmitting signals.

PRECAUTIONS

● Use the proper electrical fuse.
Do not pull out the power cord unless the unit is turned off.

● Do not start or stop operation by disconnecting the power cord.

● Do not obstruct or block the air inlet or air outlet of the air conditioner.



● Do not insert any objects in the air outlet of the indoor or outdoor units.

● Do not splash water on the air conditioner.

IF NOISE IS HEARD

There may be hissing sound during operation or just after shut down. This is caused by the refrigerant that is circulating inside the unit

There may be a cracking sound at starting and stopping the unit's operation. This is caused by heat expansion or contraction of plastics.

BEFORE CALLING FOR SERVICE

Before calling for service, please check the following common malfunctions and correct as needed.

Problem	Cause	Remedy
● Unit does not operate. Stand-by indicator does not light up	❑ Unit not connected to power ❑ Power failure	■ Plug in the power cord ■ Check main fuse
● Unit does not operate. Stand-by indicator lights.	❑ Remote control malfunctions	■ Check remote control batteries ■ Try to operate from a closer distance ■ Start from on-unit controls ■ Perform reset operation by pressing buttons:(11)(12) (17)(18) for 5 sec.
	❑ The remote control is locked	■ Unlock the remote control
● Unit does not respond properly to remote control command	❑ IR signal does not reach unit	■ Check for obstruction between unit and remote control. Clear if needed.
	❑ Distance between remote control and unit too large or aimed at from improper angle	■ Get closer to unit
	❑ IR receiver on-unit exposed to strong light source	■ Dim lights, fluorecents especially
● Air does not blow out from indoor unit	❑ De-icing protection mode is activated ❑ Unit in AUTO FAN mode ❑ Over cooling in DRY	■ Normal operation in HEATING mode ■ Normal operation in DRY mode
● COOLING, DRY or HEATING does not start immediately	❑ 3-min. compressor delayed start	■ Normal operation for these modes
● Unit functions but does not perform sufficiently	❑ Improper temperature setting ❑ Unit capacity insufficient for load or room size	■ Reset temperature ■ Consult your dealer

INSTALLATION INSTRUCTIONS

1.ACCRESSORIES SUPPLIED WITH AIR CONDITIONER
2.LOCATION OF INDOOR AND OUTDOOR UNITS
3.ELECTRICAL REQUIREMENTS
4.INSTALLATION OF THE INDOOR UNIT
5.CONDENSATE HOSE CONNECTION
6.ELECTRICAL CONNECTIONS BETWEEN INDOOR AND OUTDOOR UNITS
7.REFRIGERANT TUBING
8.FINAL TASKS

The appliance shall not be installed in the laundry.

Contens

INSTALLATION INSTRUCTIONS
FOR SPLIT WALL MOUNTED AIR CONDITIONER

1 ACCESSORIES SUPPLIED WITH THE AIR CONDITIONER

Shape	Name	Qty	Used for
	Mounting Plate	1	Wall mounting of the indoor unit
	Remote control With batteries	1	Operation of unit
	Remote control bracket	1	Wall mounting of the remote control
	Screws washers dowels	4	Wall mounting of indoor unit
	Screws, Dowels	1	Wall mounting of remote control bracket
	Outdoor unit drain connector	1	Outdoor unit water drain
	Mounting pads	4	Padding of outdoor unit bottom support
	Cable ties	4	Securing wires in the indoor and outdoor unit
	Cable terminals	1	Securing of grounding wire on the indoor and outdoor unit
	Air purifying filter (Optional)	2	Cleaning the air
	Operation and installation instructions	1	Users and installers reference

2 LOCATION OF INDOOR AND OUTDOOR UNITS

Select the location considering the following:

INDOOR UNIT

1. Choose a location which will provide good air circulation. ensure that no objects or furnishings prevent air circulation.
2. Do not install the unit near a heat source or where it will be exposed to direct sunlight.
3. The location must allow convenient electrical drainage and tubing connections.
4. Installation site should provide an easy passage to outdoors.
5. The unit must be mounted on a strong wall that will withstand the generated vibrations.
6. Install the mounting plate as shown.

OUTDOOR UNIT

1. The location must allow easy servicing and provide good air circulation.
2. The unit may be suspended from a wall by a bracket (Optional) or located in a free standing position on the floor (preferably slightly elevated).
3. If the unit is suspended, ensure that the bracket is firmly connected and the wall is strong enough to withstand vibrations.
4. Unit location should not disturb neighbors with noise or exhaust air stream.
5. Place the mounting pads under the unit legs.
6. Install the outdoor unit as shown. Refer to the technical and service manual for allowed distances.
7. When the unit is installed on a wall, install the drain connector hose and drain plug as shown.

Fig.1
1.Bottom of outdoor unit
2.Drain connector

Fig. 2
Drain installation Example

Fig 1

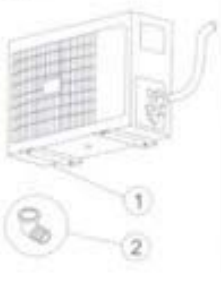


Fig 2

Fig. 3
Length of electric cable to mains

Fig 3

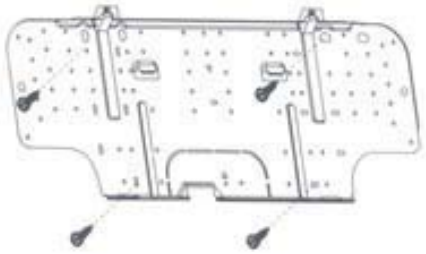


Fig. 4
Direction of tubing

Fig 4

Fig. 5
1. To attach
2. To remove

Fig 5

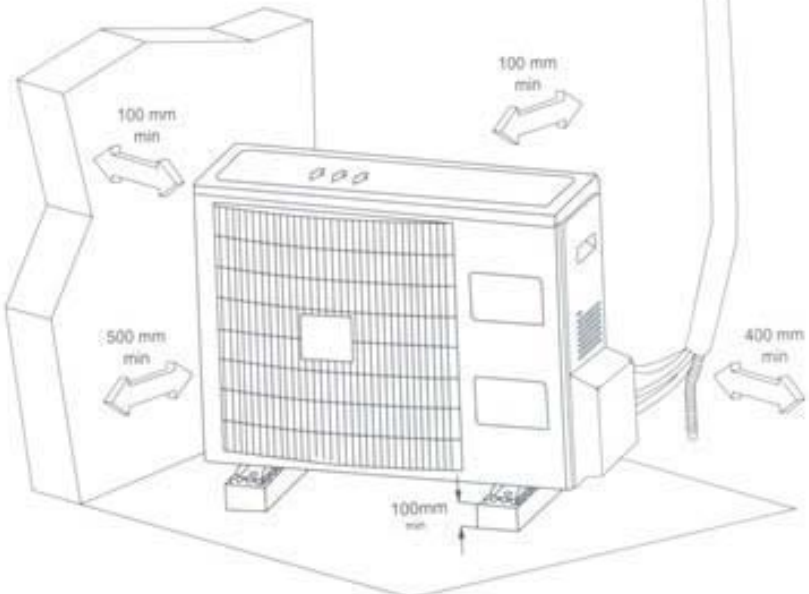


Fig 6

Fig. 6
1. Mounting pads (x4)

3 ELECTRICAL REQUIREMENTS

Electrical wiring and connections should be made by qualified electricians and in accordance with local electrical codes and regulations. The air conditioner units must be grounded.
The air conditioner unit must be connected to an adequate power outlet from a separate branch circuit protected by a time delay circuit breaker, as specified on unit's nameplate.
Voltage should not vary beyond ± 10% of the rated voltage.

4 INSTALLATION OF THE INDOOR UNIT

REMOVAL AND INSTALLATION OF THE FRONT PANEL

1. Open the front panel.
2. Place the horizontal deflection louvers in a horizontal position.
3. Open the screw caps on the panel front.
4. Unscrew the screws to release the front panel.
5. Remove the front panel by lifting it in the direction indicated by arrows.
6. After installation of the indoor unit, reinstall the front panel. Place the top end of the panel onto the top end of the indoor unit, press on the upper part of the panel, and at the same time push the bottom toward the indoor unit.
7. Replace the screws and their caps.

Fig. 7
1. Lift front panel
2. Screw caps
3. Screw
4. Horizontal deflection levers
5. Screws
6. Front panel

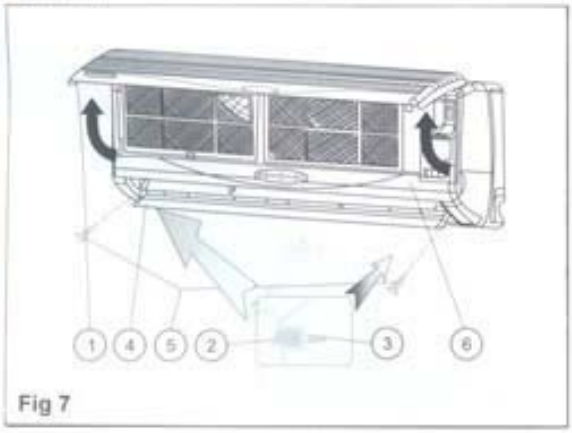


Fig 7

REFRIGERATION TUBE ROUTING

1. There are five possible routes for installing the refrigeration tube as shown.
2. For route (6), cut the bottom notch in the rear.
3. For routes (5) or (7), cut the side notches in the rear and in the front panel.

Fig. 8
1. Front
2. Rear
3. Rear outlet
4. Lefthand outlet
5. Lefthand rear outlet
6. Bottom outlet
7. Righthand outlet

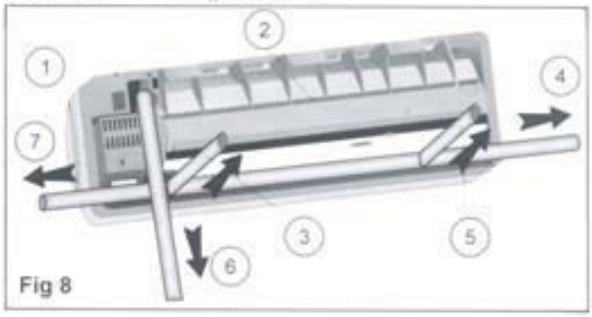


Fig 8

INSTALLATION OF THE MOUNTING PLATE

1. Figure 9 shows the location of the mounting plate relative to the unit size. Refer to one of the drawings, according to your unit length (marked in square).
2. Locate the mounting plate as shown on the wall in a horizontal position, using a spirit level.
3. Mark the position of the four mounting holes on the wall and drill four holes to accommodate the dowels.
4. Mount the mounting plate on to the wall by the four screws. Ensure screws are tightened properly.

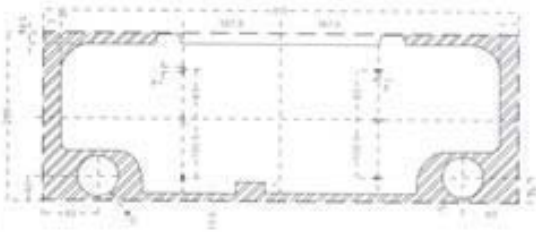


Fig 9

PENETRATION OF WALL FOR TUBING

1. Mark the location of the hole on either side of the mounting plate as shown, and drill it at a 5° downward angle, as shown.
2. The hole is drilled at an angle, to prevent condensed or rain water from penetrating back into the room.
3. Trim the hole in the wall with a ø80 mm commercial plastic tube.

Fig. 10
A. OUTDOOR SIDE 1. Drill 80 mm.
B. INDOOR SIDE 2. Wall

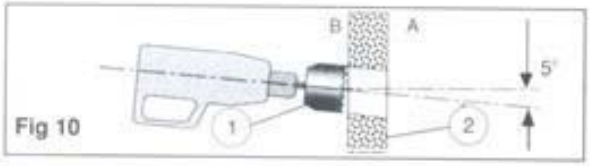


Fig 10

SUSPENDING AND RELEASING THE UNIT FROM THE MOUNTING PLATE

1. Make sure that the refrigerant tubes, electric cables and condensate water hose are well insulated with closed cell rubber based insulating tubes (6 mm thickness), are wrapped together with UV stabilized non-adhesive plastic tape, and are passed through the hole in the wall.
2. Hang the indoor unit on the two hooks that are located near the top edge of the mounting plate.
3. Press the lower part of the indoor unit against the mounting plate until the catches snap into the slots and lock the indoor unit to the mounting plate.
4. Check the installation by pulling the unit towards you.
5. To release the unit from the mounting plate, lift up the unit and then pull the unit towards you, to ensure that the hooks are locked.

Fig. 11
1. Indoor unit 3. Top hooks
2. Snap catches 4. Bottom hooks

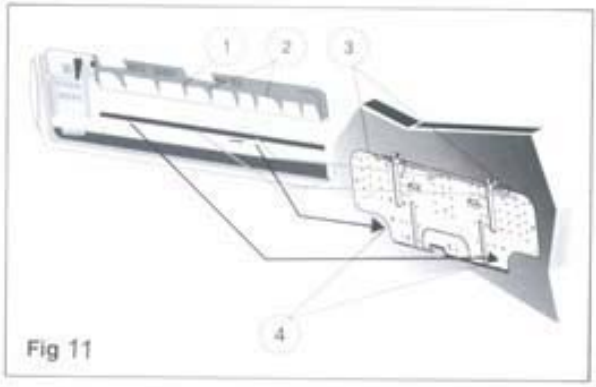


Fig 11

Fig. 12
1. Mounting plate 3. Lift up
2. Lower hook 4. Pull

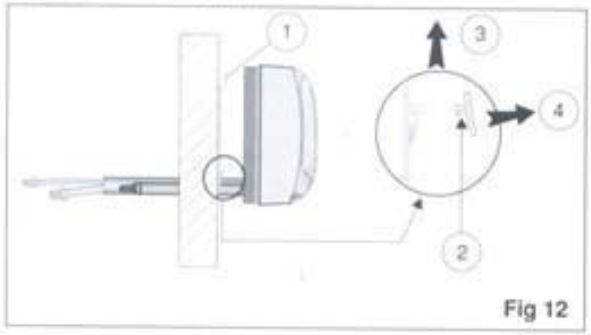


Fig 12

5 CONDENSATE HOSE CONNECTION

1. Attach the condensate drain hose to the corrugated hose in the rear groove of the indoor unit.
2. Wrap the drain hose together with the refrigerant tubes and electrical cables.
3. Ensure that the condensate drain hose is at all points installed in a downward slope manner.

Fig. 13
1. Drain hose
2. Clamp
3. Downward slope

Fig 13

Fig. 14
1. Trap
2. U- bend
3. End immersed in water

4. When installing the drain hose avoid traps and U-bends. The end of the drain hose should not be immersed in water.

Fig 14

Fig. 15
1.Electric calbe
2.Refrigerant tubing
3.Condensate drain hose

5. For a lefthand outlet, lay the drain hose on the bottom of the indoor unit rear groove.

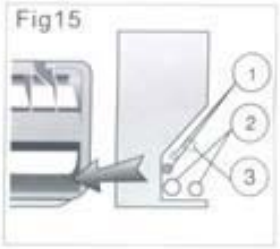


Fig. 16
1. Vent
2. Downward drain
3. Water drain hose

6. When the installation location requires long horizontal sections, a vent must be provided at the top of the hose to prevent overflow of the unit drain pan.

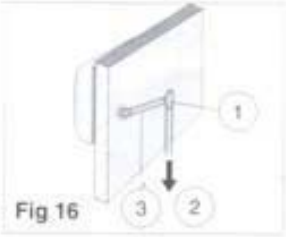


Fig 16

7. Upon completing the installation, test the water drain by pouring at least two liters of water into the unit drainpan. Check that the water drains off.

6 ELECTRICAL CONNECTIONS BETWEEN INDOOR AND OUTDOOR UNITS

1. To connect the indoor unit to the outdoor nit use the following electrical cables, protected for outdoor use:

Multiple wire cable
4 wires x 1.5 mm^2
(supplied with the unit).

MULTIPLE WIRE POWER CABLE

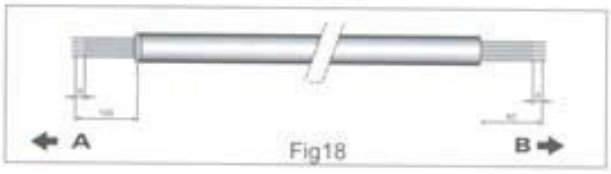
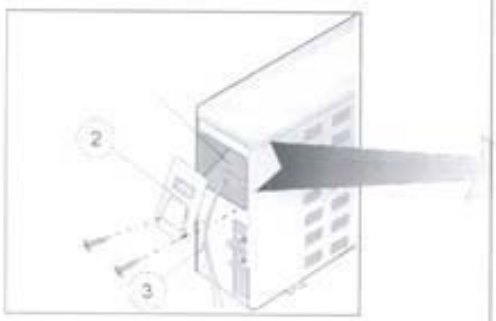


Fig18

Fig.18 A.OUTDOOR B.INDOOR

2. Prepare the multiple wire cable ends for connection as shown in fig.18.
3. Connect the cable ends to the terminals of the indoor and outdoor units, as shown in fig.19.
4. Shape a loop and connect the yellow/green ground wire (2) to ground terminal screw of the indoor unit, as shown in fig.19.
5. Secure the multiple wire power cable with the cable clamps.

Fig.17
1.Terminal 2.Cover 3.Cable tie



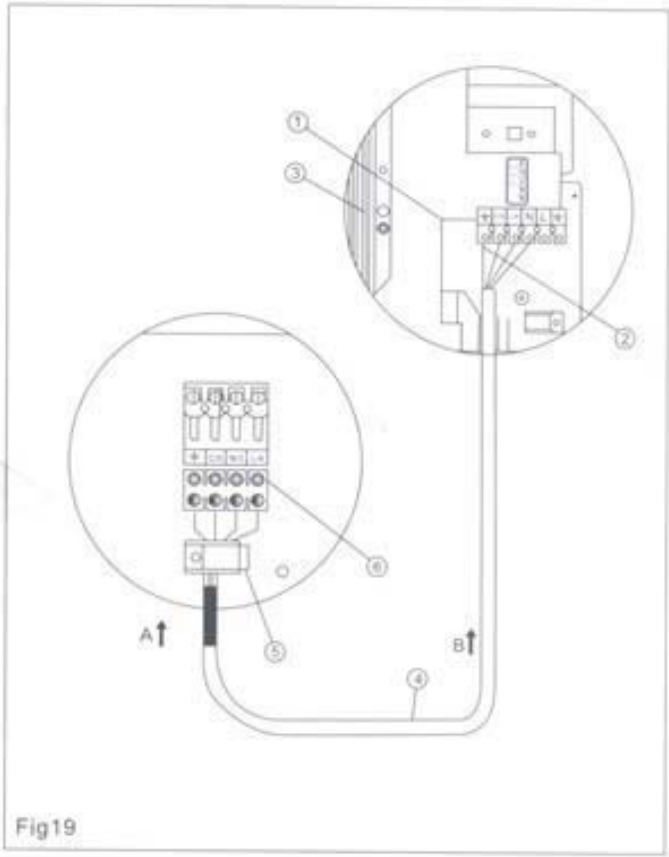


Fig19

Fig.19
1.Indoor unit terminal
2.Ground wire
3.Indoor coil
4.Multiple wire calbe
5.Cable clamp
6.Outdoor unit terminal
A.OUTDOOR B.INDOOR

NOTES:
The wire color code can be selected by the installer.

7 REFRIGERANT TUBING

CONNECT THE INDOOR TO THE OUTDOOR UNIT

The indoor unit contains a small quantity of refrigerant. Do not unscrew the nuts from the unit until you are ready to connect the tubing. The outdoor unit is supplied with sufficient refrigerant charge. Refer to outdoor unit nameplate.

To prevent crushing, bend tubes using a bending tool.

NOTE: Use refrigeration type copper tubing only.

1. Use tubing diameter that corresponds to the tubing diameter of the indoor and outdoor units . Note that the liquid and suction tubes have different diameters. (See tube size, torque tightening table.)
2. Place flare nuts on tube ends before preparing them with a flaring tool Use the flare nuts that are mounted on the supplied outdoor and indoor units.
3. Connect the four ends of the tubing to the indoor and outdoor units.
4. Insulate each tube separately, and their unions, with at least 6 mm. of insulation. Wrap the refrigerant tubing, drain hose and electric cables together with a vinyl tape (UV protected).

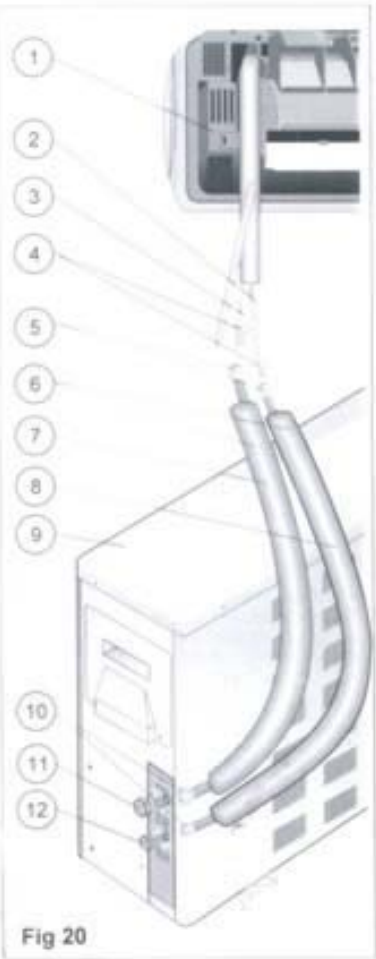


Fig 20

Caution!
When unscrewing the valve caps, do not stand in front of them or the spindles at any time, as the system is under pressure.

Fig.20
1. INDOOR UNIT
2. Liquid tube (small dia.)
3. Suction tube (large dia.)
4. Plugs
5. Flare nuts
6. Tubing between units
7. Suction tube
8. Liquid tube
9. OUTDOOR UNIT
10. Flare nuts
11. Suction valve (larger)
12. Liquid valve (small)

Tightening torques of unions and valve caps:

TUBE SIZE	TORQUE
Liquid line 1/4"	15-20 N.M
Suction line 3/8"	30-35 N.M
Suction line 1/2"	50-54 N.M
Suction line 5/8"	75-78 N.M

Fig 21

Fig. 21
1. Wrench
2. Torque wrench
3. Union

Fig 22

Fig. 22
To prevent refrigerant leakage, coat the flared surface with refrigeration oil

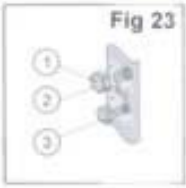


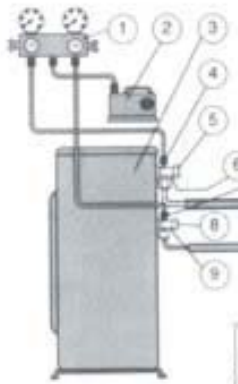
Fig 23

Fig. 23
1. Suction valve
2. Service port
3.Liquid valve

EVACUATION OF THE REFRIGERATION TUBES AND THE INDOOR UNIT

After connecting the unions of the indoor and outdoor units, purge the air from the tubes and indoor unit as follows:

1. Connect the charging hoses with a push pin to the low and high sides of the charging set and the service port of the suction and liquid valves. Be sure to connect the end of the charging hose with the push pin to the service port.
2. Connect the center hose of the charging set to a vacuum pump.
3. Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 MPa (0 cm Hg) to -0.1 MPa (-76 cm Hg). Let the pump run for fifteen minutes.
4. Close the valves of both the low and high sides of the charging set and turn off the vacuum pump. Note that the needle in the gauge should not move after approximately five minutes.
5. Disconnect the charging hose from the vacuum pump and from the service ports of the suction and liquid valves.
6. Tighten the service port caps of both suction and liquid valves.
7. Remove the valve caps from both valves, and open them using a hexagonal Allen wrench.
8. Remount valve caps onto both of the valves.
9. Check for gas leaks from the four unions and from the valve caps. Test with electronic leak detector or with a sponge immersed in soapy water for bubbles.



NOTE
For additional charge of various tubing lengths, refer to outdoor unit nameplate.

Fig 23a

Fig. 23a
1. Charging set
2. Vacuum pump
3. OUTDOOR UNIT
4. Service valve
5. Cap
6. Suction valve
*7. Service valve**
8. Cap
9. Liquid valve
10. INDOOR UNIT
11. Suction flare connection
12. Liquid flare connection

** In some models only*

8 FINAL TASKS

1. Replace all valve caps and ensure that they are tightened properly.
2. Fill gaps on the wall between hole sides and tubing with sealer.
3. Attach wiring and tubing to the wall with clamps where necessary.
4. Operate the air conditioner together with the customer and explain all functions.
5. Explain filter removal, cleaning and installation.
6. Give the operating and installation manuals to the customer.

Contens